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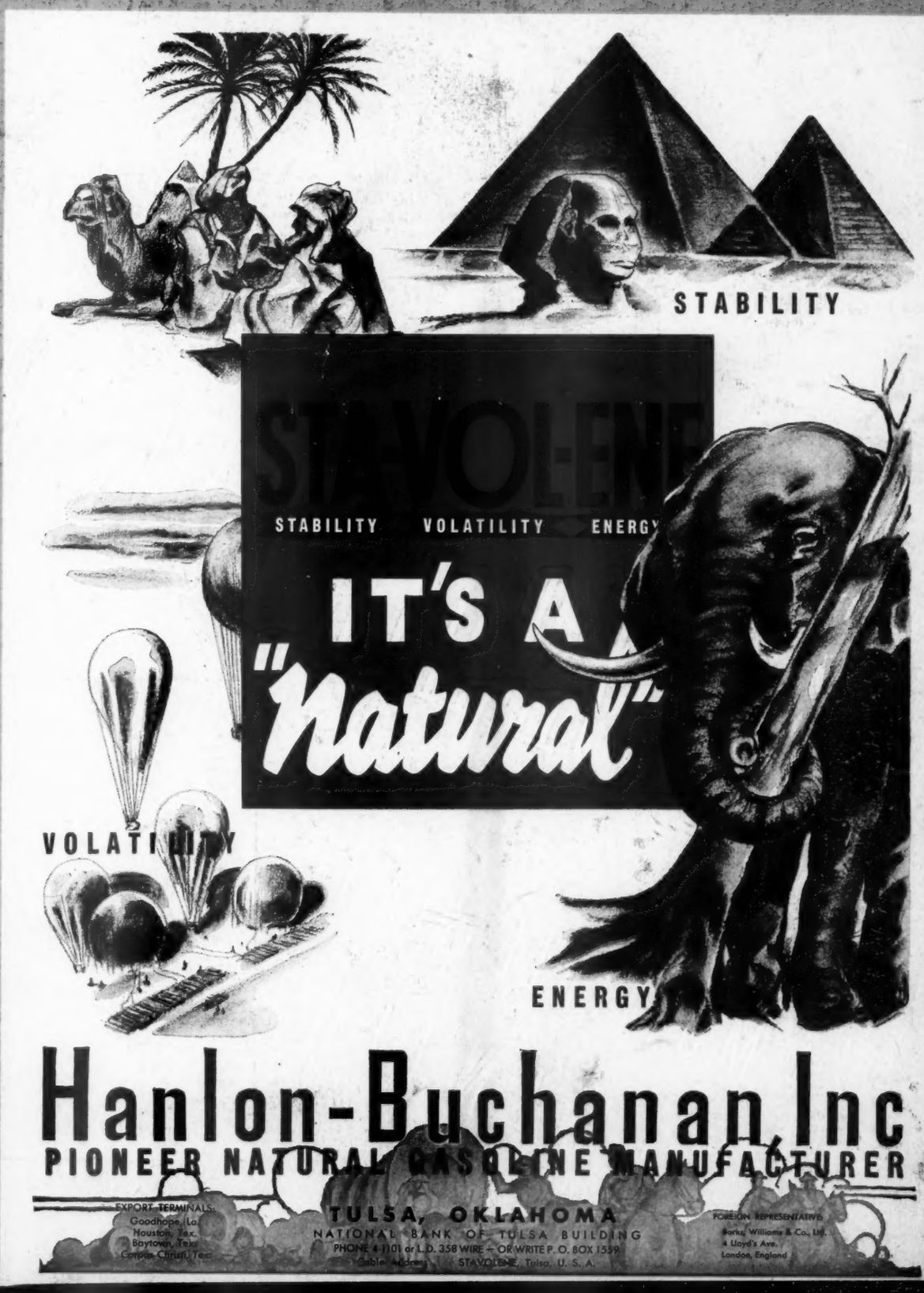

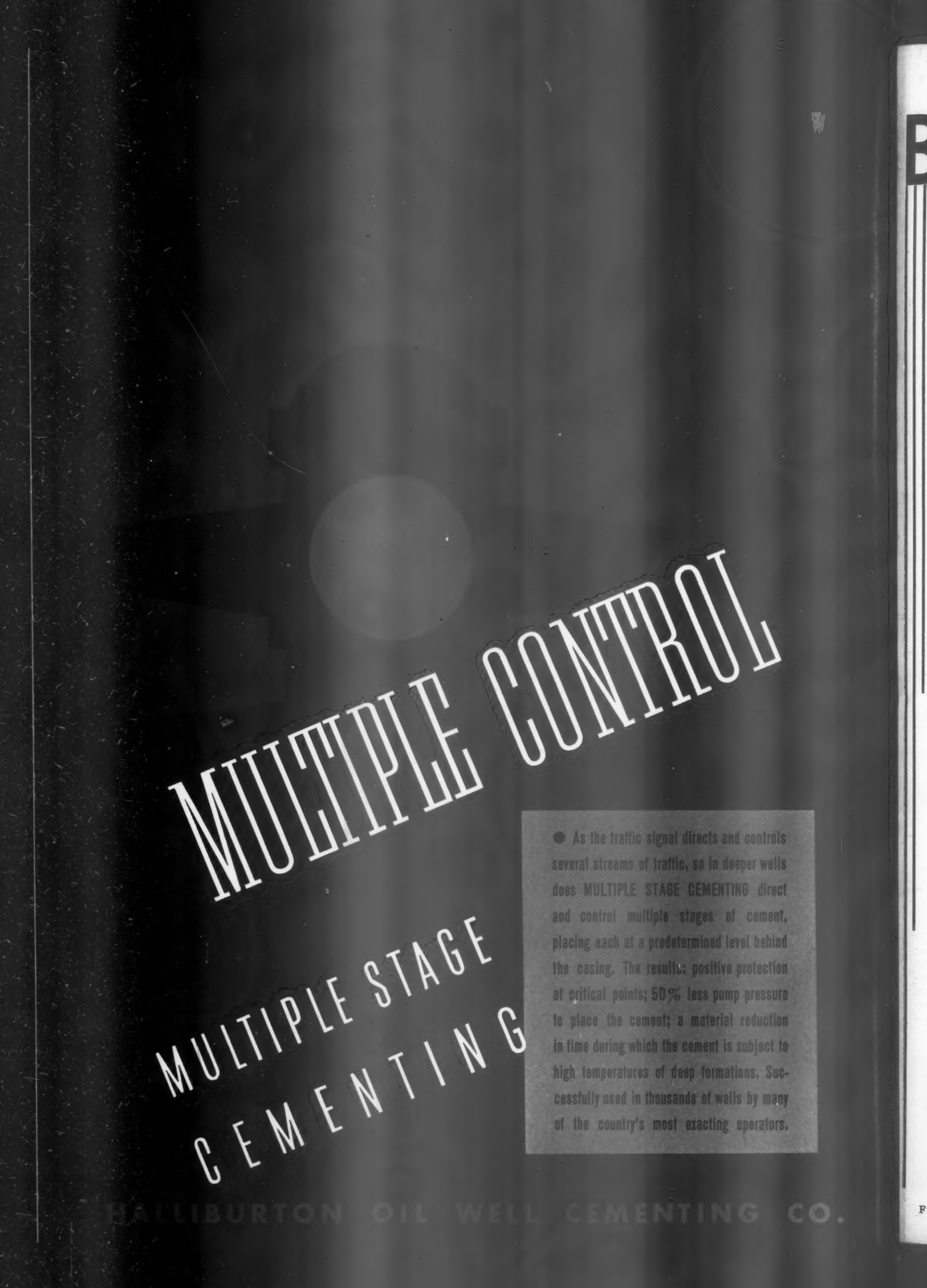
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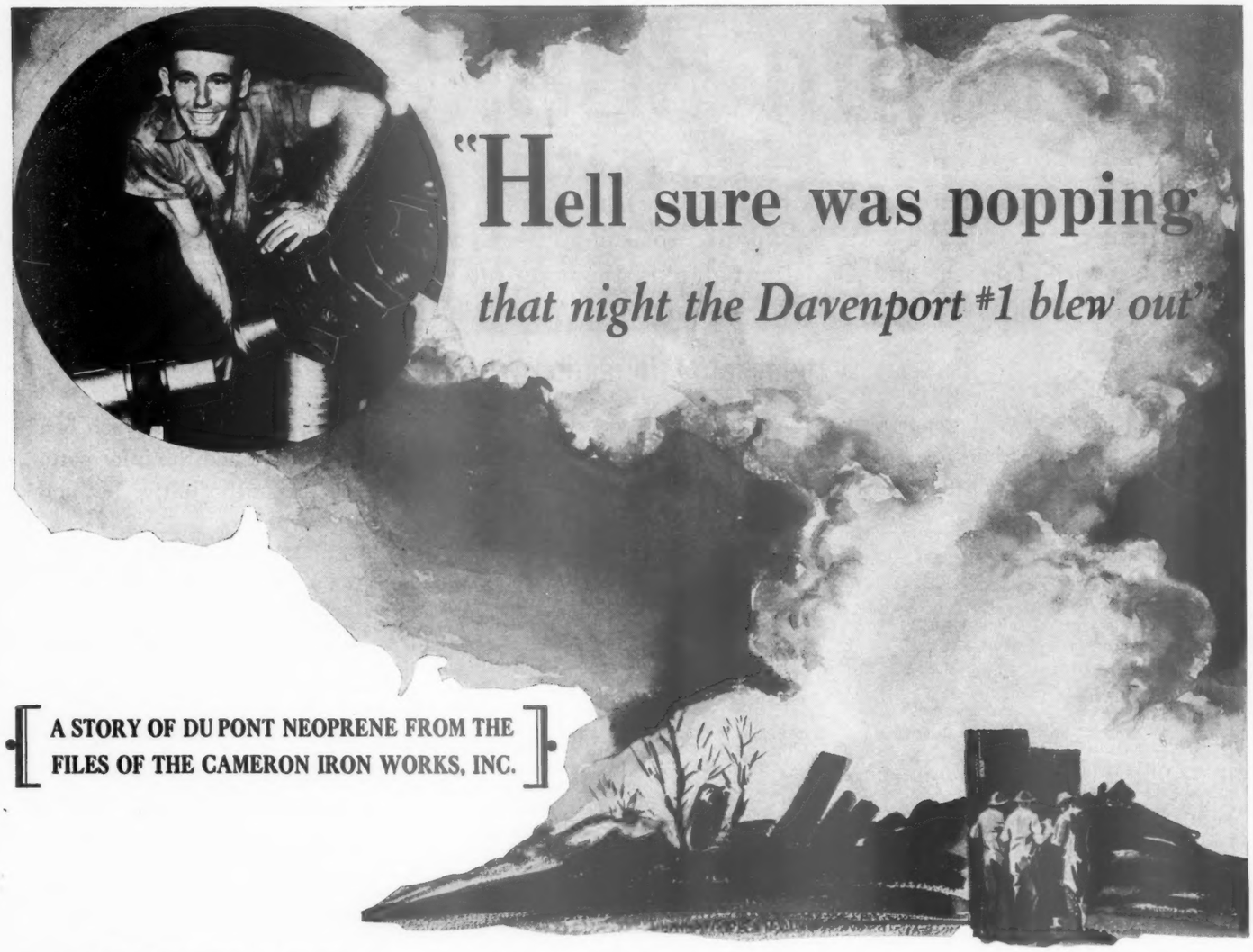
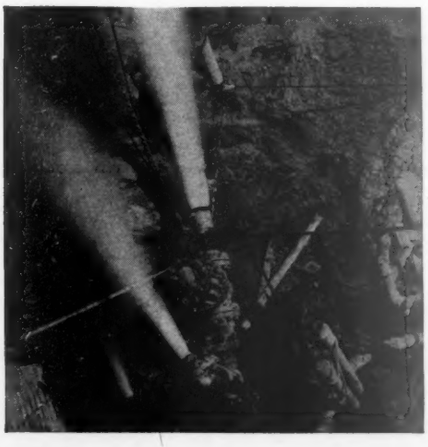


"Hell sure was popping

that night the Davenport #1 blew out"

[A STORY OF DU PONT NEOPRENE FROM THE FILES OF THE CAMERON IRON WORKS, INC.]

"YES, SIR, when that well blew out it sure did look like a bit of down yonder coming right up. Then it started cratering, and it wasn't long before derrick, drilling rig and all had gone plumb out of sight.



"After they put the fire out, the well kept on blowing and for 58 days sprayed oil and gas all over Duval County, Texas. Then they managed to slip a neoprene-equipped Cameron capping manifold over the oil string.

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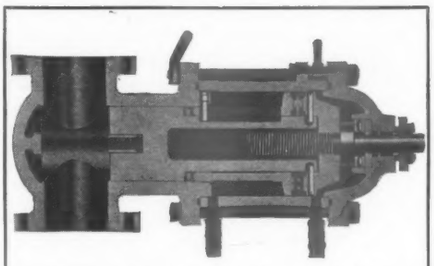

• Cross-section view of a Cameron 6000-lbs. test, pressure operated gate valve, showing neoprene-equipped ram in open position.

chloroprene rubber resembles natural rubber in strength, resilience and toughness . . . yet it is far more resistant to oils, gasoline, sunlight, aging, even corrosive acids and gases. For further information about this remarkable material, write for your free copy of the interesting, illustrated Neoprene Handbook.

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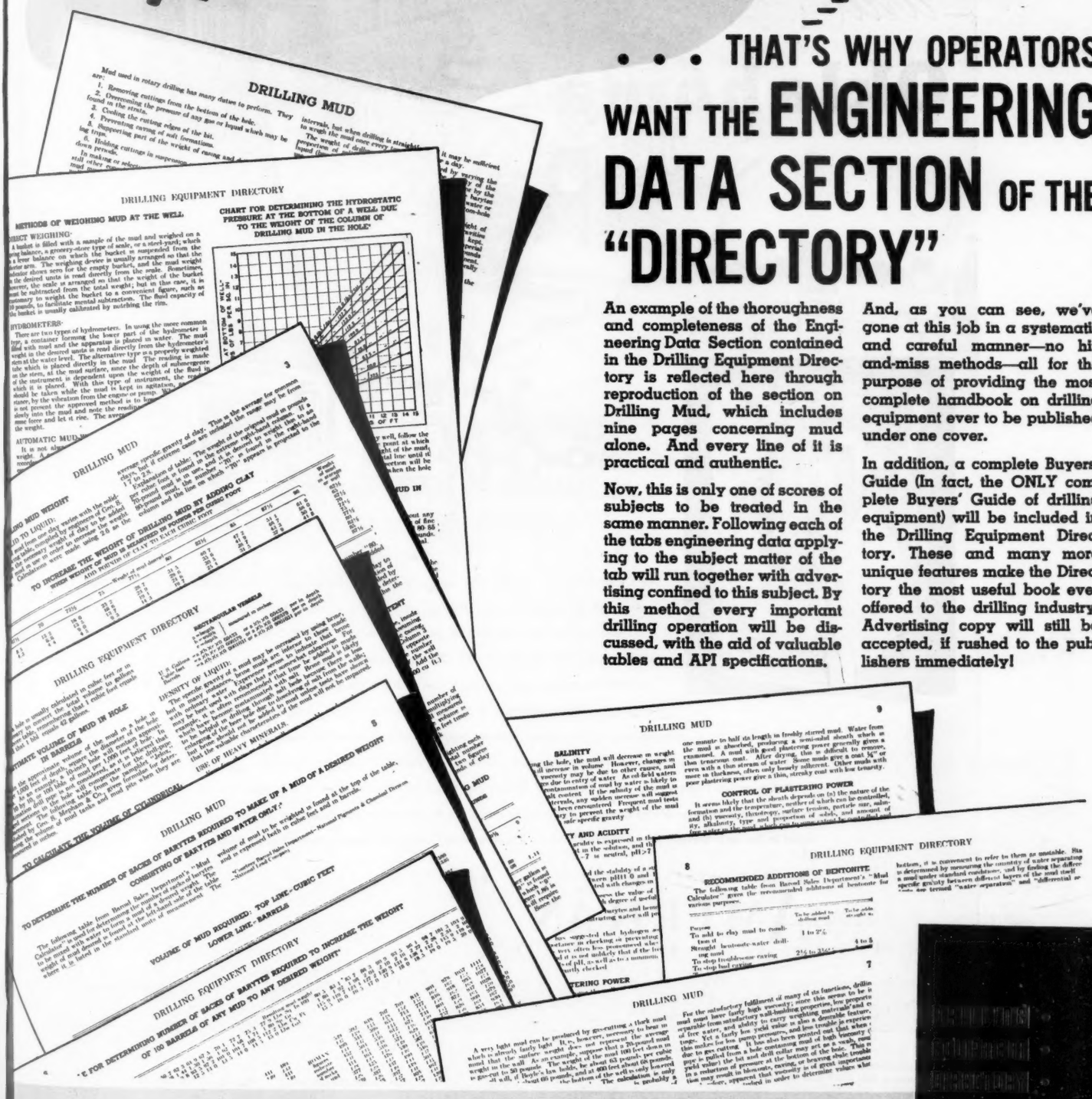
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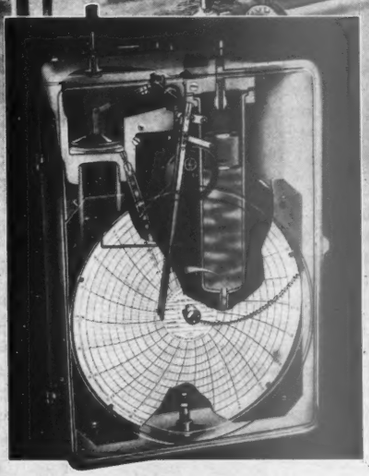

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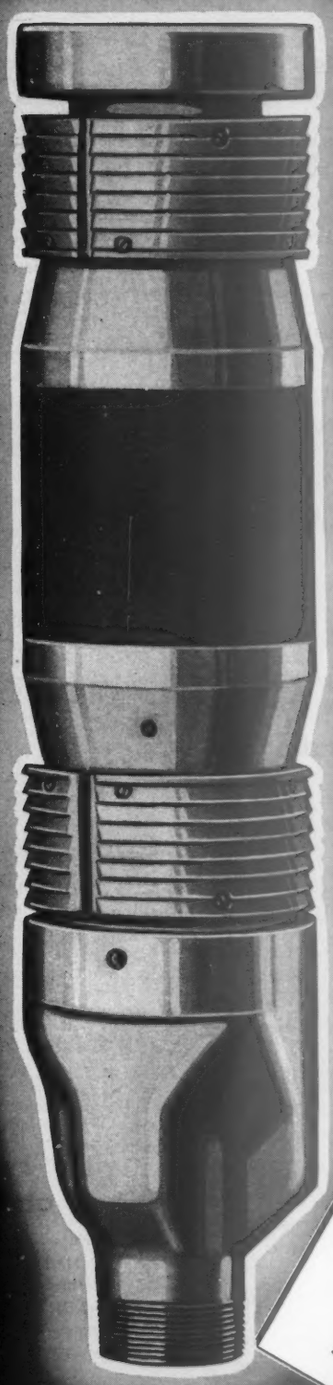

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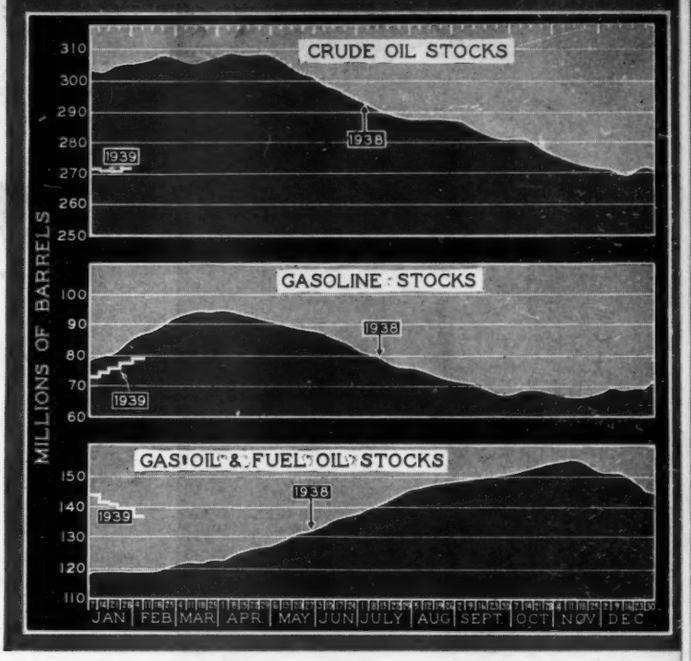
Trends

Optimism Returning as Signs Point to Upward Trend of Crude Prices


CRUDE OIL STOCKS
GASOLINE STOCKS
GAS OIL & FUEL OIL STOCKS
MILLIONS OF BARRELS
1939
1938
JAN FEB MAR APR MAY JUN JULY AUG SEPT OCT NOV DEC

RECENT increases in prices paid for crude by two Mid-Continent refining companies which had been buying under the posted prices, and the previous increases in prices paid for Pennsylvania Grade crude, have greatly encouraged oil companies and individual producers to look for an upward trend in the general crude market. A short time ago fear of a lower crude price was felt by many in the industry. This has given way to a feeling of optimism. The willingness on the part of some buyers to take over connections in stripper districts is a good sign.

CRUDE PRODUCTION *3,281,185 barrels daily average—down 154,969. One year ago 3,323,599 barrels.*

CRUDE STOCKS *271,763,000 barrels as of January 28—up 653,000. One year ago 304,286,000 barrels.*

GASOLINE STOCKS *79,149,000 barrels as of February 4—up 1,870,000. One year ago 86,788,000 barrels.*

GAS AND FUEL OIL STOCKS *137,589,000 barrels as of February 4—down 1,760,000. One year ago 120,575,000 barrels.*

REFINER RUNS *3,140,000 barrels daily week ending February 4—down 95,000. One year ago 3,149,000 barrels.*

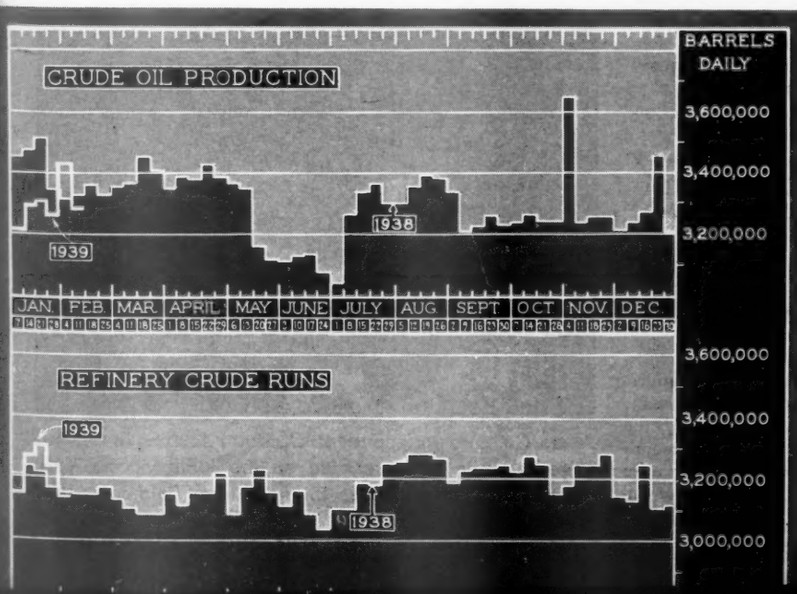
(Later A.P.I. figures on refinery stocks and runs not available owing to Lincoln's Birthday holiday)

The Ramsey pool in Payne County, Oklahoma, small in area but very rich in initial oil production, had three wells added to the 17 already producing. Two of the wells were given potentials of 8,699 bbls. and 6,795 bbls. per day, respectively. The third had not yet had a potential production test. Nine new wells in Ector County, West Texas, yielded an average of over 1,200 bbls. each, and six new wells in the Wasson-Bennett pool, also in West Texas, were good for an average of over 1,000 bbls. per well. Barton County, Kansas, has a new pool. Production in Illinois reached a new peak of 149,867 bbls. in spite of a recent decline in completions and new field work, caused by unfavorable weather conditions.

In the refining branch light fuels, which east of the Rocky Mountains had caused little uneasiness, are assuming the dimensions of a problem. They had been a subject of concern for weeks in the Mid-Continent, where, owing to unseasonably mild weather, 1,292,000 bbls. of gas oil and distillates at the opening of the year had dropped only 7,000 bbls. by February 4. Now, however, unwieldy inventories in other areas are in urgent need of outlets. In California, where this difficulty threatens to become chronic, stocks of gas and fuel oil have been swollen by addition of some 21,000,000 bbls. in the last year.

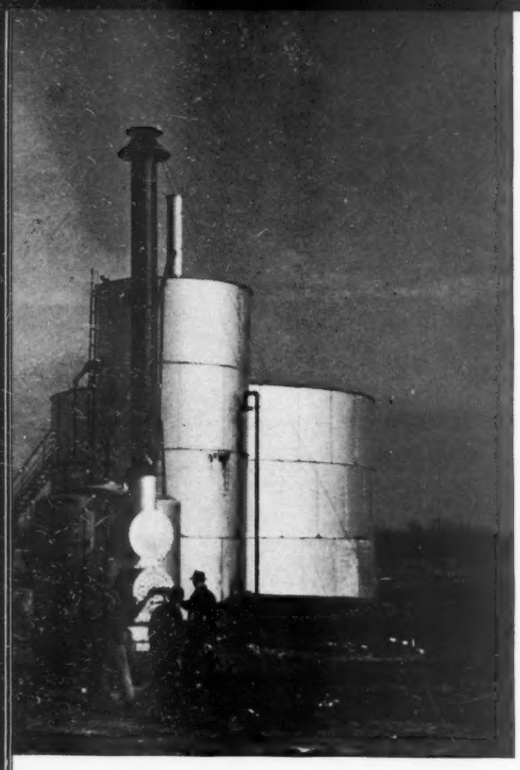
The country's gasoline stocks have been rising at such a rate in recent weeks as to cause anxiety. Notwithstanding the experience of 1938, when the industry ended the season of peak consumption with about 72,000,000 bbls. of motor fuel on its hands, additions to stocks now are running neck and neck with those of a year ago. In the week ending February 4 stocks increased 1,870,000 bbls., compared with 1,775,000 bbls. in the comparable week of 1938. It is apparent that unless runs to stills undergo curtailment the profitless season of 1938 is likely to find its counterpart in 1939.

Bright stocks and neutrals, which have been a weak spot for a year or more, especially in the Mid-Continent area, are improving. In the Mid-Continent, where price-cutting demoralized the market, there was 71 days' supply of bright stock on December 31, 1938, against 86 on November 30, at drop of 15 days' supply in one month.



DAILY AVERAGE PRODUCTION FOR WEEK

	Feb. 11, 1939	Bur. Mines Feb. est. of demand	Feb. state allowables	Feb. 4, 1939
Oklahoma City	100,950	.....	.....	90,925
Fitts	31,425	.....	.....	32,775
Remainder of state	300,825	.....	.....	298,300
Total Oklahoma	433,200	482,500	428,000	422,000
East Texas	372,750	.....	.....	447,146
West Texas	205,500	.....	.....	239,800
North Central Texas	109,120	.....	.....	119,548
Texas Panhandle	64,196	.....	.....	65,897
East Central Texas	91,893	.....	.....	101,700
Gulf Coast Texas	351,750	.....	.....	396,250
Southwest Texas	105,896	.....	.....	125,596
Total Texas	1,301,105	1,297,500	1,319,542	1,495,937
North Louisiana	72,380	.....	.....	69,385
Gulf Coast Louisiana	192,850	.....	.....	191,650
Total Louisiana	265,230	246,800	255,140	261,035
California	617,500	580,000	600,000	605,750
Kansas	144,600	148,600	153,900	140,125
Arkansas	53,150	48,200	.....	52,360
Eastern fields	94,750	94,300	.....	92,750
Illinois	149,867	102,500	.....	146,110
Michigan	54,183	47,200	.....	51,657
New Mexico	102,600	99,600	99,600	102,450
Rocky Mountain area	65,000	72,800	.....	65,980
Total United States	3,281,185	3,220,000	.....	3,436,154



W. S. Tatum checks over his treating system in SW NW SW Section 8-1n-8e, Salem field in Marion County

Illinois Awaiting to Speed Up

CENTRALIA, Ill., Feb. 14.—The only thing that holds back the Illinois fields from the momentum they gained in December is unfavorable weather. In December from 80 to 90 wells, including oil, gas and dry, were being completed weekly. There was a slight falling off early in January, followed by a more noticeable decline as high water made transportation through the fields nearly impossible, slowing all kinds of work and causing completions to drop to as low as 58 per week and then to 47 and 49 in the following two weeks. Last week 61 wells were finished, and it needs only freezing weather to increase the total to something like the figures that prevailed in the early winter. Not only have completions fallen off, but the volume of new work has declined to an even greater extent. This can only mean that when weather conditions are improved there will follow a rush of new work that will again make the big field a hive of activity.

A Disappointment

The Devonian lime possibilities of the Sandoval pool, in Marion County, may be confined to the top of the structure, and cover but a small area. After the completion of the Southwestern Oil & Gas Co.'s No. 21 Benoist, NW NW NE Section 8-2n-1e, as a producing well in the Devonian, found at 2,888 feet and drilled to 2,926 feet, things looked inviting. No production reports have been given, but the well has been estimated all the way from 300 to 3,000 bbls. Following the completion of this well excitement ran high and interest continued when Max Pray started a test on the Langenfeld farm in the SW NW Section 4-2n-1e, three-quarters of a mile to the northeast of the new well. The Pray test soon showed that it was running lower than the discovery well and when the Devonian was struck it was found to be 130 feet down dip from the first well. A Schlumberger log was made and it indicated a moderate oil content with a low water content. However, deeper drilling developed considerable sulfur water and after an "electric eye" was run all hopes of a producer were given up and preparations were made to abandon at 3.075 feet. There is now some talk of L. M. Jones, a cable-tool contractor, taking the well over in an attempt to make it a paying proposition.

Another test in the pool drilling to the Devonian is that of the J. W. Menhall Corp., three-quarters of a mile south of the Pray well and known as No. 1 Illinois Central, SW NE NW Section 8-2n-1e, and it is running considerably lower than the discovery well just 1,250 feet away. On the top of the Chattanooga it is 85 feet lower.

The Menhall test on Monday of this week was at a total depth of 3,020 feet. A Halliburton test at that depth developed some water. The well had a showing of oil in the Niagara at 2,970-71 feet. While the hole is not as deep as in the Max Pray test, the chances of a producing well appear very remote.

The Sandoval pool has been producing since 1908 from the Benoist sand and previous to the testing of the Devonian the deepest well drilled has been to the Mississippian at 1,732 feet. At present the pool has a proven area of 770 acres and is producing 211 bbls. daily. It has a cumulative production of approximately 2,698,000 bbls.

Pipe Line Facilities

Additional pipe line facilities are being provided to take care of the large daily production now being run in Illinois, and while the gross runs in December exceeded 3,650,000 bbls., the demand for Illinois crude has increased and is expected to be greater in the spring. The largest line now under construction is that of the Illinois Pipe Line Co. which is laying 198 miles of pipe, 127 miles of 10-inch; 31 miles of 12-inch and 40 miles of 8-inch. This will add an additional 25,000 bbls. daily to the capacity to the company's lines. At present the company is able to deliver 90,000 bbls. daily, with an offering of better than 115,000 bbls. It is reported that some of this crude will go as far east as Buffalo and Pittsburgh.

The Central States Pipe Line Co. (Texas Co.) is reported to have purchased the gathering lines of the Sohio Co. near the Fairfield pool, in Wayne County. This purchase was made to permit the Texas Co. to run oil of its own north from Fairfield to Clay City, where it connects with an 8-inch line of the company running to the refinery at Lawrenceville. Recently the company completed a 6-inch line from Boylston, in Wayne County, to the main line.

The Illinois Pipe Line Co. has been delivering oil to the Texas Empire Pipe Line, which has been shipping the oil for the Globe, which now amounts to approximately 20,000 bbls. daily.

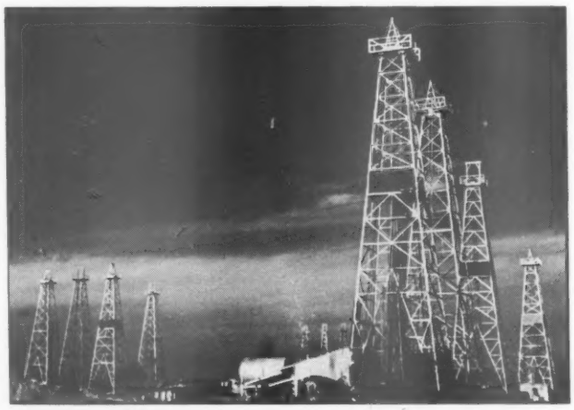
The accompanying table gives a list of the pipe line companies, their destination, and the amount of oil run by each during the month of December, the last month for which pipe line figures were available. The figures do not include monthly runs by the Illinois Pipe Line Co. from the old Illinois-Indiana fields which amounted to 369,808 bbls.

MONTH'S PIPE LINE RUNS

Pipe line—	Monthly runs	Destination
Big Basin Ref.	22,398	Centralia, Ill.
Canyon P. L.	56,632	Aetna Ref., Louisville, Ky.; Worth Ref., East Chicago, Ind.
Central Crude P. L.	38,964	Allied Ref., Canton, Ohio
Centralia Refining Co.	61,974	Centralia, Ill.
Central States (Tex.)	622,010	Lawrenceville, Ill.
Crude Oil Purchasing	37,076	Canfield Ref. Co., Cleveland, Ohio
Egyptian Ref. Co.	27,965	Centralia, Ill.
Fayette Co. P. L.	74,375	Allied Ref. Co., St. Elmo, Ill.
Illinois P. L.	106,681	Martinsville, Ill.
Magnolia P. L.	284,027	East St. Louis, Ill.
Manley P. L.	20,739	Big Basin Ref. Co., Centralia, Ill.
Oklahoma P. L.	214,198	Ill. P. L., Brownstown, Ill.
Potter Bros. P. L.	3,751	Stoll Ref., Louisville, Ky.
Pure Oil G. O. P. Div.	811,963	Ill. P. L., Martinsville, Ill.
Republic P. L.	186	Unknown
Shell	125,228	East Chicago, Ind.
Schio	699,840	Ill. P. L., Brownstown, Ill.
Western P. L.	442,334	Globe Ref. Co., Lamont, Ill.
Total	3,650,341	

Texas Buys Maxwell Lease

The Texas Co. has purchased from the Kingwood Oil Co. and the Wiser Oil Co. the 70-acre Maxwell lease in the Salem pool for a consideration said to be $550,000. The leases are known as Maxwell "C" in the SW SW SW Section 29-2n-2e; Maxwell "B," NE SE Section 30, and Maxwell "A," N half SE NE Section 31-2n-2e. The last available pipe line runs on this lease showed the Maxwell "C" to have two producing wells, with a daily average production of 60 bbls. The pipe line runs from this lease during December was 1,857 bbls., and accumulated production of 5,942 bbls. This was run through the Sohio pipe line. On the "A" lease three producing wells had a daily average production of 783 bbls. and 47,399 bbls. accumulated production. The Sohio ran



Texas Co. and independent Operator Hollingsworth engage in some close spacing on the Johnson and Kalkbrenner leases in the Salem field

Better Weather Conditions Work; Outlets Increased

Following the plug down with a measuring line after cementing casing in an Illinois well: Arthur Roberts, "Hawkshaw" Roberts, "Hap" Dickson and J. Strouble

but 23 bbls. from this lease while the Western Pipe Line (Globe) ran 760 bbls. daily. The "B" lease has one producing well with 31 bbls. daily average production and 2,833 bbls. accumulated oil. The Sohio pipe line runs the oil. The total runs for the month from the three leases amounted to 27,189 bbls.

This lease is well located on the structure and will produce from two levels, Benoist and McClosky. The lease was originally held by the Wiser Oil Co., and a deal was made with Kingwood on an interest basis. Both companies have other leaseholds in the field, but they are not owned jointly.

It is reported that the Kingwood Oil Co. is dickering with another major company for a sale of additional properties, but it cannot be ascertained if this includes the production in Fayette County. In addition to the leases just sold the Kingwood Oil Co. has the Devore lease in Section 17-2n-2e, with a daily average production of 334 bbls. from three wells; the Schanafelt leases, "A" in Section 20-2n-2e, with 10 producing wells and 2,075 bbls. daily; "B" in Section 16-2n-2e, one well with a daily average production of 846 bbls., and Lease "C" in the same section with one well and 170 bbls. daily. The "A" lease has produced 64,239 bbls. to date. This oil is being run by the Western Pipe Line Co., which handled the entire production during the month of December, the last pipe line figures available.

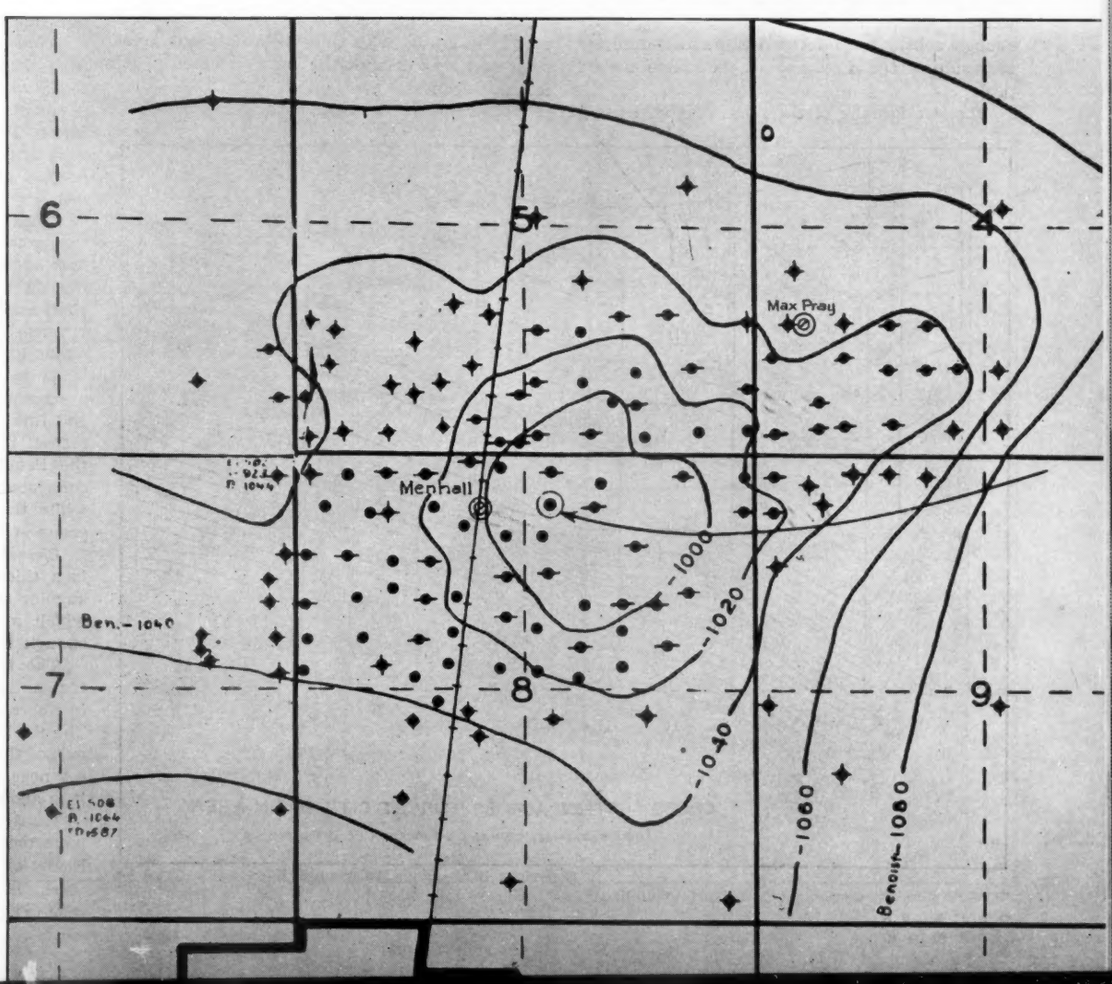
A year ago it was estimated that a total of 7,074,145 acres was under lease to majors and individuals and considerable acreage was added during the year. The principal lease owners in the state are Carter Oil Co., Texas Co., Magnolia Petroleum Co. and Gulf Refining Co. each of which, it is safe to estimate, has 400,000 acres or more of undeveloped leases. The Ohio Oil Co. has over 225,000 acres and Pure Oil Co.'s leases will aggregate close to 300,000 acres. Shell Petroleum Corp., it is estimated, has 100,000 acres or more. The Continental Oil Co. has about 56,000 acres and the Seaboard Oil Co. has close to that number of acres all gathered within the past two years. Estimates on the acreage held by other companies include: Exchange Oil Co. (Sinclair), 17,000; Tide Water Associated Oil Co., 23,000; W. C. McBride, Inc., 75,000; Superior Oil Co. of California, 45,000; Stanolind Oil & Gas Co. about 6,000; Amerada Petroleum Corp., 20,000 and Phillips Petroleum Co., 10,000 acres.

Indiana-Kentucky Lease Play

It is interesting to note that in the three-state area, Illinois, Indiana and Kentucky, the principal companies had 3,781,705 acres under lease on the first of the year. In summing up the acreage owned by the major companies in this area, the Gulf leads with 600,000 acres. In Indiana it has about twice as much acreage as its nearest rival, the Kentucky Natural Gas Co. with 113,149 acres. The Carter Oil Co. and Superior Oil Co. of California are the other large lease holders. The Exchange Oil Co. is expected to be among the large ones as soon as the company receives its charter to do business in Indiana.

In the three-state area the Carter Oil Co. has over 650,000 acres and the Texas Co. just over 500,000 acres. The Magnolia Petroleum Co. is next with 480,650 acres.

The Sandoval field Devonian lime discovery may be confined to a small area as the Menhall and Max Pray tests are low on structure. The arrow points to the discovery well



Geology of Northeast Kansas Forest City Basin Justifies

By HUGH McCLELLAN
Consulting Geologist, Wichita, Kans.

Since the remarkable oil development in the Illinois basin, which began two or three years ago, interest in similar structural basins has grown amazingly. There have always been a few who have preached the virtues of the Forest City basin of northeastern Kansas, notably the Kansas State Geological Survey, and now at last it seems that they are to see either proof or disproof of their views. Geophysical methods of prospecting are responsible for many of the discoveries in Illinois, and these methods will undoubtedly be used, and, in fact, are already being used in the Forest City basin. Leasing has been on such a large scale, and the number of operators interested is so large, that a considerable number of test wells is certain to be drilled in the next year or two.

Although the entire Forest City basin is located in parts of four states, namely, Kansas, Nebraska, Iowa and Missouri, it is proposed to confine this article chiefly to a consideration of the Kansas sector of the basin. In this area there are only about 60 deep wells which have penetrated the older rocks, in about 15 counties. A number of these wells had showings of gas and oil, and the fact that no commercial production was discovered cannot be advanced as proof that none ever will be found. At one time central western Kansas was dotted with dry holes, before enough subsurface information was accumulated to result in the discovery of the numerous oil pools.

The stratigraphy of the rocks of northeastern Kansas has been discussed in detail in several publications, the latest of which is Bulletin 20 of the Kansas Geological Survey, by J. W. Ockerman. In this report it will be necessary to give only a brief summary of the characteristics of the formations found in the Forest City basin.

Pre-Cambrian.—The basement rocks consist of pink granite, schist, gneiss and quartzite, which have been penetrated in various wells to depths of 200 to 800 feet.

Basal sand (Cambrian).—This sand, resting on the basement complex, consists of reworked fragments from the top of the basement rocks and varies from 0 to 60 feet in thickness.

Arbuckle limestone (Upper Cambrian and Lower Ordovician).—This formation, as elsewhere in Kansas, consists mainly of crystalline dolomite with some chert and thin beds of rounded quartz sand. The thickness varies from 450 to 760 feet, the thinning being toward the northwest.

St. Peter sand (Middle Ordovician). — This member of the Simpson formation of Oklahoma is often called "Wilcox sand" but cannot be directly correlated with it. Like other Simpson sands, it generally consists of rounded and frosted quartz grains with thin beds of bright green shale and gray dolomite. It varies from 50 to 100 feet in thickness.

Galena-Platteville (Middle Ordovician). — This formation may be correlated with the lower Viola and the upper Simpson of Oklahoma. It consists of white or brown dolomite and limestone with some chert and occasionally sand. The thickness averages about 110 feet in northeastern Kansas.

Maquoketa shale (Upper Ordovician). — This shale correlates very well with the Sylvan shale of Oklahoma, both because of its stratigraphic position and its lithologic characteristics. It is greenish gray, with considerable dolomitic content. The thickness averages about 70 feet in the Forest City basin, but it is apparently absent, due to nondeposition, in Leavenworth County and eastward, and to the southeast it is absent on the flank of the Ozark uplift, due to erosional truncation (see map).

"Hunton limestone" (Siluro-Devonian) (Upper Silurian and Middle and Upper Devonian).—Hunton is a convenient term for this group of limestones since the term is well known to the oil fraternity and has definite connotations. However, in the Forest City basin only the lower part of the formation can be definitely correlated with the Hunton, the upper part being younger than any of the Hunton of Oklahoma.

This formation varies in thickness from 120 feet to 459 feet, thinning away from the axis of the basin. It consists of white or brown dolomite and limestone, with some chert and sand.

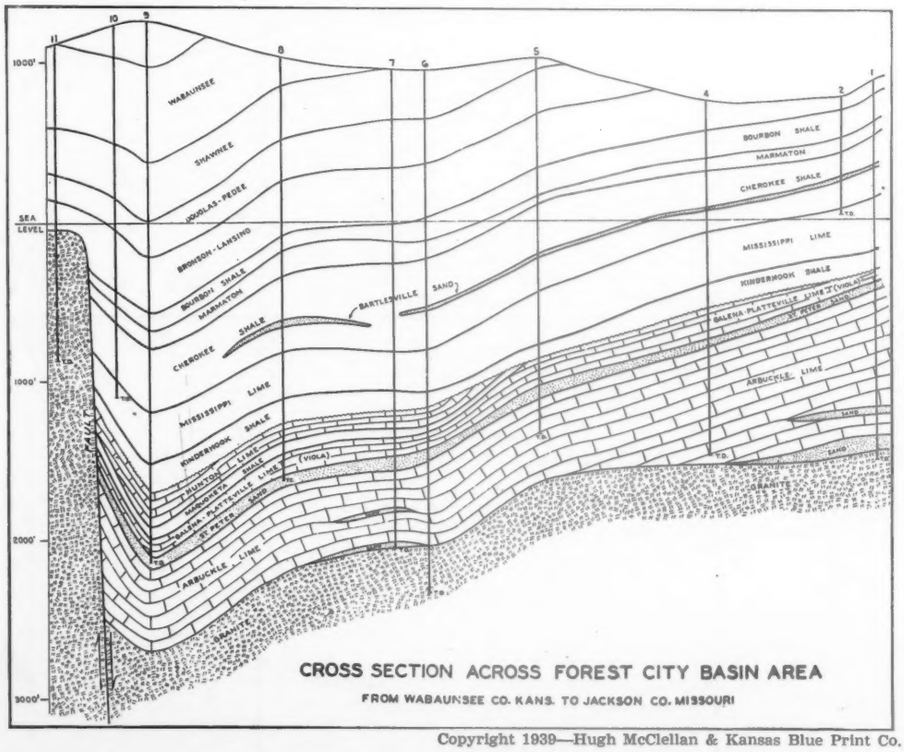
Kinderhook shale (Lower Mississippian).—This shale is greenish gray, calcareous or dolomitic and lithologically almost exactly like the Maquoketa. The dolomitic content increases toward the east, resulting in the presence of thin beds of gray argillaceous dolomite. The thickness of this shale is irregular, varying from 90 to 240 feet.

"Mississippi lime" (Middle Mississippian).—Owing to the extensive erosion of the upper surface of this formation, it varies greatly in thickness in short distances, from 145 to 400 feet, and chert is often concentrated at the top. In general it consists of dense or finely crystalline, gray or white limestone with considerable chert, which is its most outstanding characteristic. Near the northeastern corner of Kansas it shows shaly and fine sandy phases in the upper part. In this respect it is somewhat like the series containing the Benoist sand of Illinois but this has been correlated as Meramec or middle Mississippian, while the sand series in Illinois is of Chester group of upper Mississippian age.

Cherokee shale (Lower Pennsylvanian).—This is a thick series of dark gray shales and fine angular sandstones, with a number of coal beds, which are commercially important where near enough to the surface.

The thickness varies from about 400 feet in the southern part of the basin to nearly 800 feet in Nebraska just north of Brown County, Kansas. The thickness decreases markedly away from the axis of the basin. The percentage of sand is greatest near the northeast corner of Kansas where it is about 35 per cent.

Lenticular sands in the Cherokee shale are important oil reservoirs in eastern Kansas. The lowest of these is the Burgess, which frequently



CROSS SECTION ACROSS FOREST CITY BASIN AREA
FROM WABAUNSEE CO. KANS. TO JACKSON CO. MISSOURI

Copyright 1939—Hugh McClellan & Kansas Blue Print Co.

Sector of Drilling

rests directly on the Mississippian. Others are the Bartlesville sand, which is very important in Greenwood County, and the Squirrel sand, which lies just below the Fort Scott limestone, at the top of the Cherokee, and is a gas horizon near Kansas City.

Marmaton group (Henrietta of Missouri) (Lower Pennsylvanian).—This group contains several limestones, including the Fort Scott, and Pawnee, and one important gas sand, the Peru, which lies above the Pawnee limestone. Unlike the Cherokee, the Marmaton group is thickest near Kansas City where it averages 250 feet. It thins somewhat westward and averages only 200 feet along the axis of the basin. Only a small part of the upper Marmaton is found west of the Granite ridge.

Missouri series (Middle Pennsylvanian).—The remainder of the Pennsylvanian system above the Marmaton group is found at the surface in the Forest City basin. The beds dip gently westward and are found in wells throughout the oil-producing areas of Central Kansas.

The Lansing-Kansas City group of limestones crop out in, and just west of, Kansas City. Along the axis of the basin the top of the group is found at depths ranging from 975 feet in Section 9-1n-14e, Nebraska, to 1,495 feet in Section 19-12s-11e, Wabaunsee County, Kansas. The thickness is fairly uniform at 350 to 400 feet. This group is an important oil reservoir in Central Kansas.

Virgil series (Upper Pennsylvanian).—This series is composed of the Douglas group of shales with local sandstones, the Shawnee group of limestones and shales and the Wabaunsee group of gray-to-red shales with thin limestones and some sandstones in the lower part. Only two horizons are important oil producers in Central Kansas, i.e., the Topeka limestone at the top of the Shawnee group and the Tarkio limestone near the middle of the Wabaunsee group. Since these formations outcrop on the east side of the basin, and are only a few hundred feet deep at the deepest point in Wabaunsee County, they could offer oil possibilities only along the axis of the basin. The thickness of the Virgil series is about 1,000 feet.

Big Blue series (Permian).—This series is represented by the Council Grove and Chase groups in this area. The Council Grove consists of red and green shales and limestones, while the Chase group is characterized by hard cherty limestones, with red and green shales. The Permian rocks on the surface have been divided by the Granite ridge and the lower part of the basin is outlined by the outcrops of the limestones of the Council Grove group, which completely surround it.

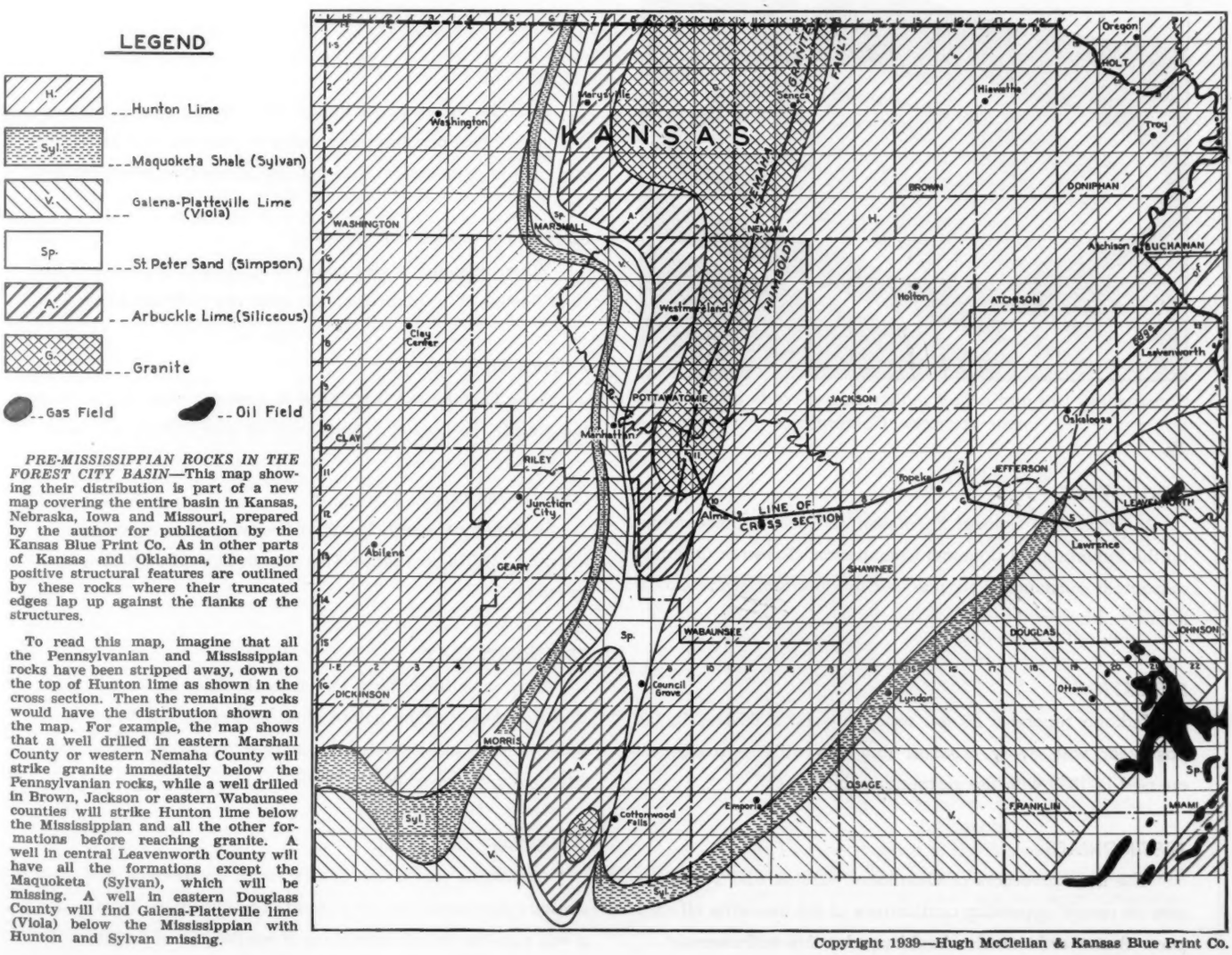
Structure and Geological History

The Forest City basin, in the northeastern part of Kansas, is a narrow structural trough lying just east of the Nemaha buried mountains, or Granite ridge. The highest part of the Granite ridge is in Nemaha County about 6 miles south of the Nebraska line. The dips to the east are steep and the axis of the basin lies only about 6 miles east of the crest of the ridge. The east flank dips gently upward toward a northwestern shoulder of the Ozark uplift.

In the Eldorado oil field, in Butler County, Kansas, the Granite ridge is faulted on the east side. At the Nebraska line, in Range 13e, the Humboldt fault occurs at the surface. In both cases the downthrow is on the east, and the vertical displacement in the granite increases northward, from 600 feet at Eldorado to about 2,000 feet near the Nebraska line.

The Ozark uplift and the Central Kansas uplift show ancient folding or warping along lines trending northwest-southeast. This was apparently the grain of the pre-Cambrian rocks which provided lines of weakness for a number of later movements. In post-Devonian (post-Hunton) time the northeast-southwest trends (of which the

(Continued on Page 38)



PRE-MISSISSIPPIAN ROCKS IN THE FOREST CITY BASIN—This map showing their distribution is part of a new map covering the entire basin in Kansas, Nebraska, Iowa and Missouri, prepared by the author for publication by the Kansas Blue Print Co. As in other parts of Kansas and Oklahoma, the major positive structural features are outlined by these rocks where their truncated edges lap up against the flanks of the structures.

To read this map, imagine that all the Pennsylvanian and Mississippian rocks have been stripped away, down to the top of Hunton lime as shown in the cross section. Then the remaining rocks would have the distribution shown on the map. For example, the map shows that a well drilled in eastern Marshall County or western Nemaha County will strike granite immediately below the Pennsylvanian rocks, while a well drilled in Brown, Jackson or eastern Wabaunsee counties will strike Hunton lime below the Mississippian and all the other formations before reaching granite. A well in central Leavenworth County will have all the formations except the Maquoketa (Sylvan), which will be missing. A well in eastern Douglass County will find Galena-Platteville lime (Viola) below the Mississippian with Hunton and Sylvan missing.

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SPARKS FROM THE NEWS

PROOF

Restoration of connections and local prices is substantial evidence of improvement in the crude situation.

FULL HOUSE

When 850 field engineers and operators attend an A.P.I. Production chapter, as at Kilgore, East Texas, last week, the value of these meetings is abundantly demonstrated.

STORAGE FOR SURPLUS OIL

Constructing two and a half million barrel crude oil reservoir near Torrance, California

GOOD WORK

In continuing Colonel Thompson as Texas representative on the Interstate Oil Compact Commission, Governor O'Daniel recognized outstanding service and the interests of the state's leading industry.

EMULATION

Indiana reports a 20 per cent increase in drilling in the past year with every prospect that this will be greatly increased in 1939 with the surrounding incitement.

TESTIMONIALS

The new governors of Oklahoma, Kansas and Texas are now on record approving continuance of the interstate oil compact. States still outside should ponder this endorsement.

CURIOSITY

The first hearing since the Texas Railroad Commission reorganization is being awaited with much speculation, but apparently without alarm.

HOPEFUL

The Illinois Legislature is reaching the stage where it is asking whether the course of operations there is best for the state.

CALIFORNIA COMING?

A bill to create an oil and gas conservation board in California has been introduced at Sacramento. It may not get through, but it is worth trying.

TEXAS TEST

With the Texas conservation law coming up for renewal this year it will pay the oil industry to keep an eye on Austin and also to demonstrate that the law is working satisfactorily.

SIMPLE

When gasoline stocks continue to ascend although crude runs decline it is plain that the runs are still too high.

ACTIVE COUNTY

Ector County in West Texas is now the most active drilling area in the Lone Star state with 60 tests drilling last week.

ONE TO 144,000

In Kenedy County, Texas, a company shortly will start a test on a 144,316-acre lease. This sounds like a South American operation.

EXTENDING PLAY

They may be drilling for oil in the land of Tom Sawyer and Huckleberry Finn before long, the Forest City basin lease play now being extended to include acreage around Hannibal, Mo., home of Mark Twain.

AWAITING THE DRILL

Geologists agree that source rocks are present and good stratigraphic traps may be present in northeastern Kansas, but it will take the drill to determine if worthwhile oil is present.

A Design for More Effective Proration

By JOSEPH E. POGUE
Vice President, Chase National Bank*

Over a period of years the writer has presented a number of studies on various aspects of proration, in a progressive attempt to analyze critically and constructively the economic complexities of this interesting institution, which in a decade has revolutionized the economics of oil production in the United States. In the course of the investigations leading to these papers, the changing nature of proration and the principles underlying its evolution have gradually become clear, so that it is now possible to depart from the analytical method and to construct a synthesis of the steps that, if furthered by the industry, should carry proration past the economic hazards that still surround it to the goal of maximizing the value of the petroleum resource to the industry and the public alike.

Nature of Proration

Proration literally means the allocation of demand among competing producers on a pro rata basis, but the term now carries a much broader significance for it is employed to describe the entire process by which the production of crude oil in the United States is regulated. There is naturally much confusion of thought on the subject, for proration is an evolving system of control based upon principles of conservation and equity and embracing a body of practices that are tending to adjust themselves to the needs of the situation but are subjected to varying and divergent influences in the process. As it is now constituted, proration is a planned production measure designed to prevent waste, insure ratable takings, and balance supply and demand. The procedure is administered by state regulatory bodies through use of the police power of the states under authority of state conservation laws; the practice is supported by a considerable degree of voluntary conformance on the part of operators; and the federal Government has accorded its cooperation by providing advisory quotas, circumscribing imports, checking movements of hot oil in interstate commerce, and ratifying an Interstate Oil Compact. In the course of the past 12 years, this regulatory system has become an institution with a framework of laws, court decisions, administrative bodies, committees, trade practices, and traditions.

In a limited form, proration made its appearance at various times in the past where flush production outran the absorptive powers of the market, but was abandoned in each case as soon as supply subsided so that equilibrium could be resumed without its aid. Within the past 12 years, however, the improved technical ability to find oil fields coupled with a slackening in the growth-rate of demand, has built up a productive capacity so far in excess of market requirements that proration, invoked as an emergency measure, has become a permanent establishment. There are two reasons why the conjuncture of advancing technology and maturing demand led to the institutionalization of proration: The rule of capture created an urge to produce that could not be readily restrained by the regulatory effect of price; and the tremendous difference in out-of-pocket costs between flush production and settled production transmuted this impulse into violent price changes of disturbing influence upon the economy. In consequence, once launched in the new technologic setting, proration appeared indispensable as an operating form and in turn generated the need for its spread and implementation. In short, the rule of capture became unworkable under modern technologic conditions, and proration developed as an offsetting and neutralizing influence.

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A.I.M.E. — Delivered at annual meeting in New York, February 16

Although initiated to correct conditions of overproduction, proration has its justification as a fundamental conservation measure, and its development centers around that theme. The practice of proration has clearly demonstrated that restricted flow of oil wells conserves the reservoir energy, and results in higher recoveries and lower over-the-life costs than experienced if wells are produced under conditions of open flow. The advantages of delayed production are now well understood, but these gains are not attainable under the competitive operation of leases in subdivided oil pools. Only by an actual pooling of leases in the single reservoir—unit operation—or by the imposition of rules of production that comes to the same effect—proration—can the oil pool be handled according to the dictates of advanced engineering practices. Consequently, a curtailment of flush production promotes recovery and operating efficiency while leading to improved economic balance.

The ideal way to produce an oil field is to restrict the flow to a rate that results in the most effective utilization of the reservoir energy. In this manner the greatest practicable recovery of the oil is achieved and resort to pumping is deferred until near-exhaustion of the deposit. The form of the reservoir energy is complex, varying from pool to pool, but in general it is represented by the driving power of edge and bottom water under hydrostatic pressure and by the compressed gas associated with the oil. The energy inherent in the gas manifests itself as a propelling force upon the release of pressure, and the dissolved gas renders the oil more fluid and reduces its tendency to stick to the sand grains. Fortunately the full effects of water-drive and gas can be utilized by adjusting the flow to the most efficient, or optimum, rate, which is subject to more or less exact determination if sufficient engineering effort is devoted to the matter.

Subdivided Pool

In the subdivided pool, which is the prevalent type, an additional precedure is necessary; namely, rates of withdrawal from the several properties in proportion to the available oil underlying each. This qualification is essential on two counts: First, to maintain the reservoir energy in continuing equilibrium in order to support optimum recovery; and second, to preserve equity as between the competing property owners. If the reservoir energy is not held in equilibrium but important differentials are permitted to develop in the reservoir as a result of unbalanced withdrawals, optimum recovery is unattainable and each operator must resort to the rule of capture to preserve his equity.

Conservation of oil, accordingly, can be attained by any system of operations that restrains the flow of the oil pool to the most efficient rate and enforces ratable takings among the competing operators in the pool. The determination of the optimum rate and of the ratable-takings formula is primarily an engineering problem. The objective is to deal with the reservoir energy, rather than the oil itself, but there are two schools of thought as to the best utilization of the reservoir pressure: The one regards it as a force to be spent, so much for each unit of production; the other, as a force to be conserved until virtual exhaustion of the oil. Upon further engineering research, the latter point of view will probably be found to be preferable, at least in all fields where a water drive can be utilized, for substantial pressure drops tend to induce a nonuniform encroachment of the water and, in

Five Points

1. The development of the optimum rate concept as a yardstick for restricting the individual oil pool.
2. The standardization of the application of bottom-hole pressure readings for the effectuation of ratable takings.
3. Harmonizing of drilling incentives with the requirements of delayed production.
4. The employment of market-demand quotas to reconcile the interim differences between optimum rates and market requirements.
5. The preservation of flexible markets to proportionate capital flow to economic requirements and prevent the development of intra-industry pressures.

JOSEPH E. POGUE

gas-saturated pools, permit gas to come out of solution to the detriment of ultimate oil recovery.

Conservation as here defined was not attainable during the period of rapid growth in the industry, for then open-flow operations, even under the stimulus of the rule of capture, were required to meet the mounting demand. Curtailed flow, the essence of conservation, became possible only after a large potential supply of oil had been made available. Hence it was inevitable that an excess of capacity must develop before demand could be filled by production throttled down to an efficient rate. Thus in the evolution of the industry, the transition from open flow to conservation practices had to be in a setting of overproduction, or at least, potential overproduction, and proration developed as the instrumentality by which the physical basis for adequate conservation practices could be arrived at.

Functions of Proration

Proration has now evolved to the point where it clearly rests upon two thoroughly established principles — conservation and equity; and involves three procedures—curtailment of flow, ratable takings, and an adjustment of restricted flow to balance the measured requirements of the market. The system is administered by means of a quota system by which it is sought to bring into accord the requirements of waste prevention and market demand, without violation of the dictates of equity. In theory no pool is permitted to produce more than its market demand, it being recognized that output in excess of market demand leads to storage, physical waste, and economic instability; whereas restriction to market demand or to the most efficient rate, whichever is lower, results in effective conservation and economic advantage. It is difficult to differentiate accurately between the stabilizing effects derived from curtailment to efficient rates and those superimposed by the functioning of market-demand quotas, because any degree of restriction upon output necessitates operations under some measure of back pressure. The casual view that proration in essence is purely a stabilization measure is in error, for a substantial degree of the stabilization observable in practice is the automatic resultant of restricted flow and ratable takings instituted on the basis of conservation. It is impossible, for example, to operate an oil pool under back-pressure without leveling out the production curve and thereby flattening the cost curve; in consequence, a smoothing effect is transmitted to price. Under the practice of proration, therefore, entirely aside from the application of market-demand quotas, a significant by-product of economic stability is inevitable.

In the operation of any economic system, of course, supply and demand must balance. Accordingly, if oil pools are to be restricted in the interest of conservation, the aggregate curtailment must conform to the dictates of demand, if consuming power is not to be regulated. Accordingly, the employment of market-demand quotas is a practical expedient to make the system workable, for existing demand does not coincide in all its ramifications with the various elements of supply at their respective optimum rates and hence an additional element of equilibration is necessary. Nevertheless the need for this additional element is probably not as great as generally believed, for judging from preliminary studies, the difference between the aggregate optimum production rate of our oil fields and market demand is not substantial; consequently proration can be directed so as to approach a plane of natural equilibrium between demand and a supply restricted according to engineering principles. At this stage, dependence upon market-demand quotas will be greatly lessened, if not entirely removed. This conclusion deserves the greatest emphasis, for the tendency in the industry is to overlook the advanced degree of evolution and hence to miss the point of greatest significance in the economics of the petroleum industry.

Two Avenues of Change

Although proration appears to have its logical goal almost within its grasp, it is not assured that this instrumentality will be permitted to follow its natural courses to such an outcome. If the potentialities of proration were clearly envisaged by all concerned, this danger would not exist; but there are many who look upon proration solely as a stabilization device that is faulty because it fails to deliver all that is hoped of it on this score and hence desire to implement it with additional controls designed to achieve these ends. Such a course of development, in pursuit of transient and illusive gains, will lead to a condition of progressive economic regimentation that will destroy the vigor and flexibility of the industry, to the detriment of its profitability as an industrial enterprise and its serviceability to the public. On the other hand, the steps needed for the successful passage of proration into a perfected conservation measure, carrying with it a high degree of derived economic stabilization at the expense of minimum interference with competitive processes, are not complicated nor beyond reasonably early attainment.

Suggested Steps

The technique of proration is adequate for the purpose, all the necessary principles have become established, and a successful outcome waits merely upon a broader cooperation among the oil-producing states and concerted efforts on the part of the regulatory bodies, the Interstate Oil Compact Commission, and the oil operators. Five points are herewith offered for consideration:

1. The development of the optimum rate concept as a yardstick for restricting the individual oil pool.

2. The standardization of the application of bottom-hole pressure readings for the effectuation of ratable takings.

3. The harmonizing of drilling incentives with the requirements of delayed production.

4. The employment of market-demand quotas to reconcile the interim differences between optimum rates and market requirements.

5. The preservation of flexible markets to proportionate capital flow to economic requirements and prevent the development of intra-industry pressures.

Optimum-Rate Concept

In its more advanced areas of application, proration has established the optimum-rate concept as a working principle, although the significance of this accomplishment has not been fully appreciated. Experience has clearly demonstrated that the best results are obtained if the output of each pool is adjusted to its most efficient rate, and engineering technique is rapidly developing whereby this criterion can be broadly and effectively utilized. All that is needed to carry this measure to a position of perfected application is the clear perception that this principle is the essence of conservation and constitutes the soundest base against which to equate demand. The regulatory bodies of the several states could advantageously study this matter intensively and formulate their policies more methodically in terms of it; for the system of proration is already logically committed to the principle and its application is well under way. It may be suggested, specifically, that the Interstate Oil Compact Commission appoint an advisory committee of engineers to conduct a comprehensive field investigation of rates of production in terms of recovery efficiencies with the view of designing procedures and recommending standards of practice for the signatory states.

Ratable Takings

The principle of ratable takings is well established in proration practices, but its application is not fully standardized or adequately implemented. The principle is essential to the operation of proration and should be inviolate. The art of bottom-hole pressure readings provides the technique for achieving a high degree of accurate control in the enforcement of the principle. Investigation and emphasis on the part of the regulatory bodies and the Interstate Oil Compact Commission would go far toward standardizing procedures and insuring systematic and effective application. The purchasers of crude, likewise, should invariably conform to this principle whenever resort must be had to pipe line proration, a practice only necessary, however, when market-demand quotas are faultily determined. In its administrative aspects, ratable takings involves the establishment of lease allocation keyed to pool quotas designed to achieve the best attainable balance between optimum rates and market demand.

Drilling Rates

Proration has brought about a system of delayed production divorced from the exigencies of the rule of capture, but drilling practices, while slowly adjusting themselves to the basic change in production rates, are still lagging in their conformance. It is believed that the disadvantages arising on this score are not fully appreciated, although the resulting disequilibrium may be diagnosed as the cause of much of the economic distress from which various groups in the industry are suffering. The fact is that drilling programs suitable to open-flow operations are obsolete under delayed production; but their unfitness, representing a natural lag in a changing setting, is subject only to slow correction until accelerated by adequately enlightened attitudes.

The administrators of proration still tend to make the well the ultimate unit of proration, this placing a premium on the drilling of unnecessary wells; whereas the proper unit is the available oil in the individual property. A change to this basis, effectuated by formulas for lease allocations involving acreage and by scientifically determined schedules for well spacing, would go far toward the correction of the existing trend to-

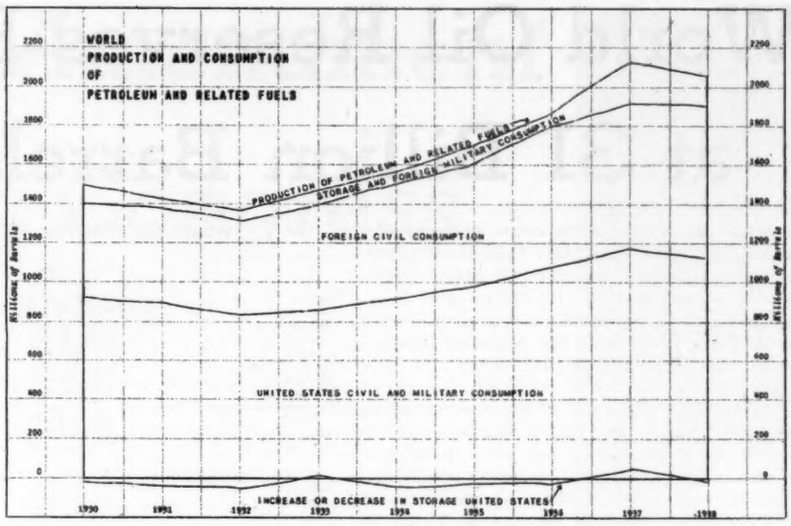
(Continued on Page 32)

Full coverage of the A.I.M.E. annual meeting, held in New York this week, will appear in The Oil and Gas Journal of February 23

WORLD'S OIL CONSUMPTION

By V. R. Garfias, R. V. Whetsel and J. W. Ristori

Cities Service Oil Co.†



Preliminary estimates indicate that world consumption of petroleum and related fuels in 1938 will be close to 1,908,000,000 bbls. or approximately 7,000,000 bbls. less than in 1937.

This total does not include military consumption in foreign countries which is not made public. Foreign military consumption in any one year, however, is approximately represented by the difference between the total production of petroleum and related fuels and the "partial total" consumption above noted, after adding any decrease, or subtracting any increase in stocks in the United States. The accompanying chart illustrates this "difference" and shows that due to the wars in China and Spain and the possibility of armed conflict in Central Europe, foreign military consumption—and possibly additions to foreign stocks—increased close to 70,000,000 bbls. in 1937 over 1936 and remained at this high point throughout 1938. This increase in military consumption and the decline of 35,000,000 barrels in consumption in the United States were the outstanding developments during the year.

It should be noted that with the annexation by Germany of Austria and part of Czecho-Slovakia the consumption of the country has increased to 53,000,000 bbls., which is about 36,000,000 short of the German production of petroleum and related fuels, and that the Rumanian fields, now more accessible to Germany, produce about 35,000,000 bbls. in excess of domestic consumption.

The following table recently published* purports to give the oil in storage in some of the European countries; however, it is not known if the figures include oil stocks for military purposes.

OIL STOCKS IN BARRELS

	Jan. 1, 1937	Jan. 1, 1938
Russia	69,236,000	72,055,000
France	18,443,000	19,773,000
Germany	10,573,000	10,390,000
Rumania	9,233,000	6,996,000
Italy	6,503,000	5,047,000
Netherlands	2,649,000	3,492,000
Sweden	1,424,000	1,909,000
Hungary	1,103,000	1,391,000
Austria	991,000	978,000
Switzerland	384,000	384,000
Total	120,539,000	122,415,000

*New York Times, September 18, 1938. †Before A.I.M.E. annual meeting in New York.

WORLD CONSUMPTION OF PETROLEUM AND RELATED FUELS IN 1938

(Thousands of barrels)

	Motor fuel	Kerosene	Gas and fuel oil	Lubricants	Miscellaneous	Total
United States	521,000	56,000	407,000	21,200	129,000	1,134,200
Russia	27,000	42,000	65,000	9,500	21,000	164,500
United Kingdom	47,500	7,000	30,800	3,800	4,500	92,800
France	26,500	1,800	18,300	2,500	4,900	54,000
Germany	27,300	1,500	15,500	3,500	5,200	53,000
Canada	23,000	650	15,500	4,000	4,850	48,000
Argentina	7,000	1,300	17,000	400	1,800	27,500
Japan	7,800	1,500	11,800	1,800	2,100	25,000
Netherlands West Indies	250	50	17,000	50	5,000	22,350
Italy	5,500	950	11,850	950	1,750	21,000
Mexico	3,000	800	12,600	200	1,400	18,000
British India	2,700	7,000	4,100	1,050	1,400	16,250
Australia	7,800	1,300	3,800	450	1,100	14,450
Roumania	1,000	1,200	10,000	220	1,800	14,220
Netherlands East Indies	1,500	2,000	6,100	250	1,500	11,350
Netherlands	3,600	2,000	3,800	450	1,100	10,950
Iran	600	1,300	5,700	400	2,600	10,600
Sweden	4,100	900	3,000	400	700	9,100
Venezuela	700	30	1,350	40	6,100	8,220
Brazil	2,750	850	4,250	250	100	8,200
Union of South Africa	4,100	470	1,700	280	400	6,950
Belgium	4,150	350	1,300	400	500	6,700
Denmark	2,700	800	2,500	350	200	6,550
China	1,300	2,800	1,700	300	400	6,500
Egypt	800	1,800	2,800	200	450	6,050
French West Africa	340	100	4,900	40	10	5,390
Cuba	750	80	4,200	50	120	5,200
Chile	700	100	4,100	70	50	5,020
Norway	1,500	500	2,500	150	200	4,850
Trinidad	120	70	4,150	30	350	4,720
British Malay	1,000	300	2,900	120	200	4,520
New Zealand	2,550	200	1,300	100	200	4,350
Philippine Islands	1,000	600	2,500	90	130	4,320
Hawaiian Islands	1,200	200	2,400	100	100	4,000
Spain	2,300	180	1,300	100	120	4,000
Iraq	350	230	2,400	60	800	3,840
Switzerland	1,750	170	1,300	150	100	3,470
Poland	800	1,100	600	350	500	3,350
Panama Canal Zone	130	30	2,770	30	40	3,000
Ceylon	355	235	2,370	30	10	3,000
Colombia	800	130	1,900	20	125	2,975
Peru	500	200	1,700	30	300	2,730
Greece	550	150	1,600	60	130	2,490
Uruguay	450	250	1,700	40	40	2,480
Irish Free State	1,200	550	280	70	250	2,350
Czecho-Slovakia	1,200	400	390	200	30	2,220
Finland	1,050	550	130	120	120	1,970
Hungary	600	480	650	110	120	1,960
Algeria	950	300	450	80	120	1,900
Puerto Rico	540	80	1,100	35	45	1,800
Palestine	380	440	650	30	200	1,700
Jamaica	210	55	1,310	10	35	1,620
Portugal	620	410	360	70	70	1,530
French Morocco	830	90	150	40	140	1,250
Hong Kong	240	60	790	100	10	1,200
Turkey	340	320	440	60	17	1,177
Kenya and Uganda	375	145	545	25	10	1,100
Siam	190	360	340	60	60	1,010
Austria	.....	.....	.....	.....	.....	.....
Miscellaneous	5,337	3,040	4,626	657	915	14,575
Total	764,857	148,455	732,451	56,227	205,517	1,907,507

Consumption figures include crude consumed as such, all its products and related fuels such as benzol, natural gasoline, alcohol used as motor fuel. Oil delivered to ships' bunkers is included in consumption of countries where deliveries were made.

WORLD PRODUCTION AND CONSUMPTION OF CRUDE OIL, PETROLEUM AND RELATED FUELS

(In thousands of barrels)

	Production of crude oil and related fuels	Consumption of petroleum and related fuels	Excess production over consumption: United States	Excess production over consumption: Outside United States	Excess production over consumption: World total	United States: Excess exports over imports	United States: To storage	Military consumption and storage outside U.S.A.
1932	1,362,039	1,348,407	R 13,011	26,643	13,632	28,781	R 41,792	55,424
1933	1,467,128	1,406,923	67,427	R 7,222	60,205	60,254	7,173	53,032
1934	1,562,834	1,507,599	26,164	29,071	55,235	64,013	R 37,849	93,084
1935	1,702,793	1,614,475	53,027	35,291	88,318	75,474	R 22,447	110,765
1936	1,864,997	1,795,560	52,209	17,228	69,437	74,890	R 22,685	92,122
1937	2,121,337	1,914,856	161,445	45,036	206,481	115,677	45,768	160,713
1938	2,062,090	1,907,507	130,770	23,813	154,583	139,000	R 8,230	162,813

World Oil Reserves Put at 31 Billion Barrels

World oil reserves at the end of 1938 aggregated close to 31,000,000,000 bbls., while the total production to the end of the year 1938 totaled 33,000,000,000, according to V. R. Garfias and R. V. Whetsel of Cities Service Co. in a study presented at the annual meeting of the American Institute of Mining and Metallurgical Engineers in New York.

Approximately one-half of the reserves are in the United States, the fields of Russia, second in importance, accounting for only about 15 per cent. Of the major producing countries, the United States is the only one in which reserves or future productions are less than the past production to date. Only three countries outside of the United States have produced to date over 1,000,000,000 bbls. Texas, California and Oklahoma have each produced more than the total production of Russia.

As world consumption aggregated in 1938 close to 2,000,000,000 bbls., the reserves "theoretically" should be able to provide for present needs for approximately 15 years.

Estimates of reserves should make clear the distinction between the known amount of oil underground in producing fields and that portion that actually can be brought to the surface.

It is suggested that under *probable* reserves, in a general way, be classed those which are reasonably expected to become *proven profitable* in a given time, and that under *prospective* reserves be grouped those which are possible but not probable of becoming *proven profitable.*

It should be evident that although no reliable estimates can now be made of the world's *proven profitable* oil reserves, such estimates are not altogether meaningless if interpreted within the narrow limits of their usefulness. It is desired to emphasize that the reserves as listed in the table above are not classified or differentiated as to type, and that they include such heterogeneous items as the largely *proven profitable* reserves of the United States, the, at present, largely *proven unprofitable* reserves of Mexico and the reserves of Russia which cannot yet be classified.

WORLD OIL RESERVES

	Reserves* (bbls.)	Prod. to Jan. 1, 1939 (bbls.)
Texas	7,500,000,000	5,650,000,000
California	2,800,000,000	5,162,000,000
Oklahoma	900,000,000	4,440,000,000
Louisiana	600,000,000	864,000,000
Kansas	600,000,000	958,000,000
New Mexico	550,000,000	197,000,000
Illinois	280,000,000	455,000,000
Wyoming	280,000,000	454,000,000
Pennsylvania and New York	200,000,000	1,071,000,000
Arkansas	120,000,000	460,000,000
Others	170,000,000	1,473,000,000
Total United States.	14,000,000,000	21,184,000,000
Russia	5,000,000,000	4,025,000,000
Iran	3,500,000,000	878,000,000
Venezuela	2,500,000,000	1,693,000,000
Dutch East Indies	1,600,000,000	838,000,000
Iraq	1,500,000,000	137,000,000
Rumania	700,000,000	835,000,000
Mexico	600,000,000	1,895,000,000
Colombia	400,000,000	230,000,000
Argentina	200,000,000	187,000,000
Peru	200,000,000	240,000,000
Trinidad	150,000,000	164,000,000
Others	550,000,000	957,000,000
Total	30,900,000,000	33,263,000,000

*No attempt is made to classify reserves into proven, profitable or unprofitable.

Before A.I.M.E. annual meeting, New York.

EFFECTIVE PRORATION

(Continued from Page 30)

ward overcapitalization of producing facilities. Effective proration requires the ability to expand the reserve without encouraging its premature development by wells in excess of market requirements. A shift in drilling incentives offers the means for harmonizing investments with delayed returns. High-cost producers dissatisfied with existing prices for crude oil would be well advised to take the lead in emphasizing the desirability of preventing the rule of capture from leading to an overinvestment in the producing department, for they are the first to suffer under such circumstances.

Market-demand quotas represent the most intricate phase of proration, for they involve problems of conflicting group and areal interests and introduce dangers of regimentation. The system of proration, accordingly, would do well to work toward a lessening of their incidence rather than in the direction of a growing dependence upon them. The restriction of production to market demand should properly be regarded as an interim expedient to reconcile existing differences between the most efficient production rates of oil pools and the essential requirements of the market. These differences are believed to be smaller than generally appreciated; hence progress can be rapid toward the effectuation of a system of proration based predominantly upon optimum production rates instead of market demand. Market-demand quotas, however, will continue to be helpful as an operating procedure, but their utility will diminish as engineering quotas founded upon optimum rate principles become more pervasively established and trade channels adjust themselves more completely to these measurements.

In the meantime, the market-demand quota system requires careful administration to avoid inequities and preserve essential flexibility in the commodity flow. Quotas should be constructed by determining the demand in each pool, limited in each case to not more than the most efficient production rate; but nominations to purchase are not satisfactory evidences of demand, and careful measurements are necessary to reflect valid changes in market requirements. The regulatory bodies can exercise accounting supervision over the gathering systems of each pool and not only audit the runs but also obtain an interim check upon conformance to the principle of ratable takings. Once this is done and each pool is restricted to the level of buyers' real requirements, the problem of overproduction is reduced to the question as to whether the aggregate buyers' demand is a fair reflection of the needs of the ultimate consumer. The regulatory bodies, however, with local demand accurately measured for each pool, can compare their respective totals with the advisory quotas of the U. S. Bureau of Mines, adjusting if necessary their field quotas by a proportional rate in order to harmonize the totals with the requirements of equilibrium in the whole market. The advisory quotas should be based not merely upon past takings of oil but should also give reflection to the factors that determine the demands of the ultimate consumer in order that the quotas shall represent the best attainable approximations of balanced requirements.

Probably no single factor has harmed our economy more than the failure to appreciate and understand the functional aspect of prices. A price is both a cause and an effect, and it is impossible to maintain a given price without that price exerting an influence upon the flow of capital—attracting capital if the price is high, repelling capital if it is low. Because of the circumstances surrounding the establishment of proration and the nature of the incentives promoting its development, it has come to be widely believed that price is the criterion by which the success of proration may be judged; indeed there was a keen sense of disappointment and frustration on the part of oil operators when the price of crude oil declined in October 1938, after five years of steady to rising prices. Yet nothing could be further from the truth than the view that proration fails if it does not produce a continued uptrend in price. If the price gets too high, excessive amounts of capital are drawn into development and the price declines; and contrariwise, the reverse reaction is induced if price falls too low. Proration, however, can legitimately be expected to provide a smoother and more stable price structure than would be attainable under open-flow operations; but the freedom of price to move up and down and therefore to influence the elements of supply should be conserved at all hazards.[1] As a matter of fact, the petroleum price structure has displayed considerable elasticity during the period of proration, but at times there has been a delayed transmission of flexibility resulting in the development of internal maladjustments; an improvement in functioning would undoubtedly result if tendencies toward localized rigidities were avoided. The promotion of a free and flexible market does not necessarily mean a low or nonremunerative price; on the contrary, there is much to suggest that a sensitive market may be expected to provide a more satisfactory price level in the presence of an effective administration of proration along the lines of optimum rate production than will be possible under any phase of controls designed for purely economic objectives.

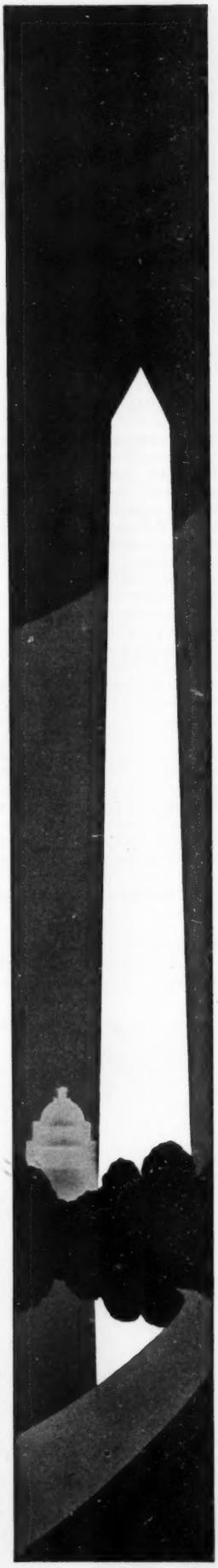
Concluding Remarks

Considering the physical, economic, and legal complications surrounding the field of oil production, it is a substantial achievement on the part of the petroleum industry to have so quickly and, relatively speaking, so successfully altered the structure of production to bring it into conformance with the technologic era. The new system is far from perfected, but the striking feature is the progress made and the vigor displayed in furthering the evolution. The suggestions advanced in this study are not novel, for the five points are well under way to accomplishment, needing merely a more concerted attitude to coordinate efforts, avoid dissipation of energy in by-paths, and prevent deflection of the natural direction of movement. Proration is not assured of a favorable outcome, for there is pressure to convert it into a pervasive economic control, but time and administrative skill can bring to sound fruition one of the most significant experiments in the economic field today.

[1] "Market prices, worked out comparatively, are the guides to the economic activities of men. They tell us what to do and what not do . . . As an economist sees prices, their function is to tell the truth regarding what is going on in the fields of production and consumption, and to correct maladjustments and bring about a re-equilibration of the various productive activities when they get out of balance. If prices move promptly and adequately, moderate price changes will usually correct a maladjustment before it goes very far. . . . Right prices . . . are prices that move goods. . . . High or low prices . . . are not good or bad in themselves, but they are good or bad depending upon whether they reflect the facts in the situation." B. M. Anderson, Jr., Governmental Economic Planning and Prices, The Chase Economic Bulletin (1936) 16, No. 1, 6, 7, 14, 15.

Wagner Act Amendment Looming in Congress

By HENRY D. RALPH



WASHINGTON, D. C., Feb. 13—Strong pressure for amendment of the Wagner Labor Relations Act is developing in Congress and the possibility is increasing that changes may be made in the law during the present session.

Dissatisfaction, evident from the start, has been increasing. It was thought for a while the administration might take the lead in proposing amendments since President Roosevelt has frequently expressed the view that the Wagner Act and similar social legislation is subject to continuous improvement as the result of experience, but, so far, Senator Robert F. Wagner of New York, author of the original law, has made no move in this direction. All three present members of the National Labor Relations Board are on record as stating no amendments of any kind are needed, so the initiative has been taken by some of the board's chief critics.

While a good many bills affecting the National Labor Relations Act have been thrown into the hopper since the session opened, only two are receiving important consideration, S. 1000, introduced by Senator David I. Walsh of Massachusetts, and S. 1264, introduced by Senator Edward R. Burke of Nebraska. The Walsh bill embodies emendments proposed at the last convention of the American Federation of Labor, and while it contains some proposals which will have the support of employer interests, its chief objective is to protect craft unions in jurisdictional disputes with the so-called industrial unions affiliated with the Committee for Industrial Organization. For this reason the Walsh bill is being vigorously opposed by the C.I.O.

Drastic Revision

The Burke bill is a very drastic revision and would reorganize the personnel of the board, greatly restrict its authority, and in effect set up an alternative system of handling labor disputes in the federal courts. While it embraces some proposals in the Walsh bill, the Burke bill will be opposed by both the A. F. of L. and the C.I.O., and not all of its provisions are endorsed by spokesmen for employer interests.

The senate committee on education and labor has referred the Walsh bill to the N.L.R.B. and the Department of Labor for comment. The same procedure may be followed with regard to the Burke bill. Later this committee will undoubtedly hold hearings on the Walsh bill, and this will open up the whole question of revising the law.

Most members of Congress have been cautious about making public statements on their attitude toward revision of the law, and many are hoping to avoid taking sides in a fight between the C.I.O. and the A. F. of L. and for this reason it appeared that labor act amendments might be deferred until the administration itself sponsored some change. However, both House and Senate have recently exhibited an increasing independence of administration wishes, and this has encouraged opponents of the board to hope for an early showdown.

Last week the House voted down several attempts to cripple the board by reducing its funds when the independent offices appropriation bill was under consideration. The chief argument against such a move, was that the act should be amended through separate legislation and not in an appropriation bill, and the debate indicated a strong sentiment in favor of amendments. In some quarters it has been suggested that either the president or Congress create a special commission to study the functioning of present labor laws, both federal and state, similar to studies made in England and Sweden last summer by a commission appointed by President Roosevelt. This would postpone a fight over the present board until the next session of Congress and might result in a proposal for entirely new machinery for settling labor disputes upon which various factions of Congress could agree.

Among the amendments proposed to the Walsh bill is one to permit an employer to petition the board for an election to determine which group of his employes is entitled to recognition for purposes of collective bargaining. The board has construed the present act as not permitting this, and the C.I.O. opposes it on the ground it could be used to prevent a union from getting started in a plant, but the inability of an employer to take any steps toward determination of the collective bargaining unit has been severely criticized.

Employe Voting

Another amendment would permit employers to discuss unionization with their employes provided there are no threats of discrimination, while other proposals would permit interested parties, including employers and rival unions, to have access to reports now held secret by the board, to subpoena witnesses, to file affidavits of prejudice against trial examiners considered unfair, and to take court action to force the board to make prompt decisions. The main object of the Walsh bill, however, is to protect craft unions in jurisdictional disputes and rival organizing campaigns and to prevent the board from invalidating employer contracts with A. F. of L. unions.

The Burke bill would make a great many vital changes in the functioning of the board and in the law which it enforces. One proposal is that one member of the board represent employers, one employes, and one the general public, a proposal which has ben criticized from many quarters on the ground that all three members should be impartial. Another amendment in the Burke bill would permit any employer named in a proceeding by the board to have the case removed to a federal court for hearing, and changes are also proposed in the board's rules of procedure to make these conform more nearly to court practice.

Restrictions would also be put on union activities such as making it an offense to intimidate workers, interfere with the orderly conduct of an employer's business, violate any law in the course of a labor dispute, or call a strike in violation of a contract or without an affirmative vote of a majority of the employes. The bill also includes an amendment long sought by certain employer groups, which was the source of much argument when the original law was passed, namely to insure that employes shall be free from threat, intimidation, restraint, or coercion from any source. The present law protects employes from coercion from employers, and labor leaders contend that addition of the words "from any source" would mean that union organizers might be prevented from making any appeals to workers to join their unions.

The chief complaint against the labor act is that it is one-sided, since it contains much about the rights of workers and the duties of employers and nothing about the obligations of workers and the rights of employers. The Burke bill is an attempt to meet this criticism, but some of its provisions are so extreme there is little liklihood they will be accepted by Congress in spite of the general feeling of dissatisfaction with the operation of the law. Congressional battle lines are now being drawn, however, and there is an increasing probability some action will be taken before many months either to change the personnel of the National Labor Relations Board or to amend the law under which it operates.

STATE CAPITALS

TEXAS

THE TEXAS RAILROAD COMMISSION is expected to maintain a stricter policy in granting new drilling permits as exceptions to spacing regulations in which case the East Texas field completed wells are likely to fall below the 1,000 mark this year for the first time in the field's eight-year life. Of the 1,641 completions in East Texas in 1938, practically all were "exception" wells. Nearly half of the field's 25,971 wells were drilled in exception to the 10-acre spacing rule. With 133,400 acres assigned to production, the field had a density of one well to each 5.1 acres as of January 27.

Some 14 major companies operating in the East Texas field are credited with 14,295 of the field's wells, while the remaining 11,676 wells are owned by nearly 1,000 independent operators. Majors hold 83,400 acres, while independents operate 49,960. These figures show independently-owned leases to be more closely-drilled than those owned by major companies.

UNUSUAL INTEREST IN THE STATEWIDE proration hearing to be held at Austin on February 20 is being exhibited by oil operators since the hearing was called primarily to adjust allowables in and between fields. The Railroad Commission having issued a proration order extending through March, with the next hearing called for March 15, issuance of the order calling the February 20 hearing was received with surprise by many operators, most of whom expressed lack of any knowledge of just what would be brought up at the hearing. In calling the hearing, Chairman Smith stated that it would be held to adjust inequities in allowables between fields, which had been brought about through the practice of granting special allowables without the formality of calling a hearing. Many observers, however, felt that while the hearing might have been called for this purpose, it did not prevent the bringing out of all evidence ordinarily heard at the usual statewide hearings.

Operators in the K.M.A. field, feeling that their allowables are placed too low and they are being discriminated against, are planning to make a determined fight to have the field allocation substantially raised. Also, some of the operators in the Yates field, feeling that the present method of allocating production in this field is detrimental to their interests, may bring up this matter for an airing. Operators in several other fields, likewise dissatisfied with their present allowables, are also expected to ask for higher field allocations.

OTHER HEARINGS CALLED for the near future include: On February 23 to formulate field rules for the newly discovered East Alice field of Jim Wells County; a similar hearing on the Katy field of Waller County on February 17; and on March 6 a continuance of the hearing held at Austin recently on the Nocona field of Montague County.

FIELD RULES FOR THE HITCHCOCK FIELD of Galveston County were issued last week calling for 660 feet between wells and 330 feet from lease lines. Method of allocation was 50 per cent to acreage and 50 per cent to per-well allowable. Potentials of flowing wells are to be taken through quarter-inch chokes for 24-hour periods, except where the commission's agent grants permission for potential to be taken on smaller chokes.

GOV. W. LEE O'DANIEL has reappointed Col. Ernest O. Thompson, of the Texas Railroad Commission, a member of the Interstate Oil Compact Commission, and Colonel Thompson in accepting the appointment wrote as follows:

"It makes me very happy to know, governor, that you feel that my services in representing the State of Texas in the work of the Oil Compact Commission has been in keeping with the best interests of Texas.

"You are quite right when you point out that the oil industry is one of the great interests in Texas and much depends upon its being conducted on an even keel. It is sometimes difficult to know just what to do when there are so many divergent interests, but please be assured that your appointment of myself as your representatives, and the reasons stated therefor, assure a teamwork between yourself and me for the best interests of our state so far as this interstate oil compact and the working under the treaty is concerned."

LEON CHASE PHILLIPS, governor of Oklahoma, born on a farm in Worth County, Missouri, December 9, 1890, moved with his parents to a farm near Clinton, Custer County, Oklahoma, two years later. Graduated from Arapaho High School in 1908; took a summer course in Southwestern State Teachers College at Weatherford and taught a country school; attended Epworth University at Oklahoma City two years; taught again, and farmed. Entered the University of Oklahoma law school at Norman in 1913, and played on the football team. He was admitted to the bar in 1916 and opened a law office at Okemah. He served in the legislature from Okfuskee County and was speaker of the house.

PENNSYLVANIA

SENATE REPUBLICAN LEADERS have served notice that they will oppose any fuel oil tax bill that may reach them.

A measure in the house ways and means committee would impose a levy of 3 cents per gallon on all fuel oil sold in Pennsylvania. It was sponsored by Representative Albert L. O'Connor, Democrat of Cambria, a heavy bituminous coal producing county.

"I'm absolutely opposed to all fuel oil tax bills introduced in this legislature," said Republican Floor Leader G. Mason Owlett (Tioga), who characterized the measure as retaliatory, pushed by the coal interests to place additional burdens on the fuel oil business.

The O'Connor measure would exempt only fuel oil delivered to the United States Government or ships engaged in interstate commerce.

Similar measures were introduced in the 1935 and 1937 legislative sessions, but failed to reach the governor's desk.

KANSAS

GOV. PAYNE RATNER, in a special message to the state legislature, asked for a renewal of the interstate oil compact for another two years.

Kansas was one of the first states to sign the compact, and at present Oklahoma, Texas, Illinois, New Mexico, and Colorado are also parties to the document intended to regulate the production of crude petroleum as between the states to prevent economic waste and overproduction of a natural resource.

Governor Ratner discussed the project with the oil advisory committee in session at Topeka on February 8. He had been advised Oklahoma already extended the authority to continue the compact. And it was expected the other states, and possibly some other oil-producing sections of the Mid-Continent field, will join in the compact this year.

THE KANSAS CORPORATION COMMISSION will sit in Wichita February 20 to hear nominations of crude-oil and gas purchasers preparatory to fixing the daily allowable for March, E. G. Dahlgren, director of the Oil and Gas Conservation Division, announces.

The commission also will hear the application of Derby Oil Co., Wichita, to compel ratable taking of gas from its well in the SE quarter Section 29-30-34w, in the greater Hugoton gas field of southwestern Kansas, and will rehear, at the request of the Atlantic Refining Co., on the proration formula for the Lyons gas field.

The same day application of Cities Service Oil Co., Bartlesville, for rules and spacing requirements for the Schroeder field of Ellsworth County will be heard.

CALIFORNIA

CENTRAL COMMITTEE of California Oil Producers fixed the state's allowable for February at 600,000 bbls. per day with a tolerance of 5,000 bbls. per day. The work done by E. E. Pyles and his emergency executive committee has had a substantial effect on crude oil production. When this committee took over the job of reducing production to 600,000 bbls. per day the daily output was averaging around 660,000 bbls. Current production is averaging around 620,000 bbls. per day. Several fields are still out of line. Work at present is centered on the Montebello extension where the committee has been attempting to show operators the advisability of limiting production to a maximum of 300 bbls. daily per well. Every well in the field, with the possible exception of two, has been cut down to 300 bbls. per day. The Wilmington field is still producing about 18,000 bbls. per day in excess of the umpire's allowable.

ILLINOIS

STEPS TO ELIMINATE "COMPLAINTS" in the Illinois oil industry were taken on Saturday by the house committee for conservation of natural resources headed by Representative Oral P. Tuttle, Harrisburg.

Majority Floor Leader R. J. Branson of Centralia told the committee he had received a large number of letters of complaint about various phases of the industry. He mentioned unpaid labor, "bootlegging" of oil from tanks at night, school leases and offset wells.

The group authorized creation of a subcommittee to work with the legislative reference bureau in drafting legislation to eliminate the grievances.

The subcommittee consists of Tuttle, S. C. Dale, Fairfield; John R. Thompson, Bridgeport; Reed F. Cutler, Lewiston; Harold D. Kelsey, Barrington; Sidney Parker, Texico, and Frank Ryan, Chicago.

the OIL AND GAS JOURNAL

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Their Responsibility

The annual statements of oil companies now being released are conclusive proof of the direct bearing that wholesale and retail prices have on the net income of integrated organizations and the industry as a whole.

In most cases these 1938 earnings are from 25 to more than 60 per cent under those of 1937, and will be found below both 1936 and 1935 in many instances.

This situation was not due to the price of crude oil. With the exception of the Pennsylvania Grade areas, the average posted prices for crude oil in 1938 were only slightly below those of 1937 and, with the exception of 1937, were the highest of any year since 1930.

For example, 36-gravity crude averaged $1.19 per barrel in 1938 compared to $1.21 in 1937, $1.10 per barrel in 1936, and $1 per barrel in 1935 and 1934.

The reduced net earnings clearly are not due to reduced volume. The final figures released last week by the Bureau of Mines showed that gasoline demand in the United States exceeded that in the previous year by 2,320,000 bbls.

Kerosene established a new record and there were no large declines in any of the principal products, excepting residual fuels, despite the fact that 1938 was a year of severe recession in general business.

The trouble lies entirely in the fact that over the past two years refiners have permitted prices on their products to show a gradual decline. The reduction at any one time has been small, generally one-eighth to one-fourth cent per gallon, or 5 to 10 cents per barrel on the heavy products.

These, however, have continued, so that now the revenue from a barrel of crude oil has decreased from 25 to as high as 50 cents per barrel in some areas. What has happened is shown in the following table (tankcar or tanker prices):

	PRESENT PRICE	1937 HIGH
Regular grade gasoline (Oklahoma)	$ .4½	$ .6⅛
Oklahoma gas oil	.3¼	.3⅞
Diesel oil (Atlantic seaboard) (bbl.)	1.65	2.20
Bunker C	.95	1.35

Obviously, with the increases in demand assured for this year the remedy lies in better control of supply. The trouble rests in the familiar tendency of refiners to supply a 100-gallon market with 101 or 102 gallons.

The extra 1 or 2 gallons are sold at distress prices which, in a short time, become the prevailing market for the other 100 gallons.

Economists have agreed that gasoline storage on April 1, 1939, should not exceed 82,000,000 bbls. Crude runs to stills of 3,100,000 bbls. in January and February, with a slight increase in March, would have assured that this objective would be reached.

The average crude runs to stills so far, however, have been approximately 100,000 bbls. daily in excess of the recommended figure. The result is that gasoline prices have shown further declines since the first of the year.

Refiners are charged with the direct responsibility of reversing this price trend and returning products to the levels in line with their manufacturing costs, and which will permit an adequate return for all branches of the industry.

They know their market and its limitations. They should be able to adjust their supplies in keeping with those requirements.

This necessary adjustment will not be made if it is left to the initiative of some one else. It can be accomplished only by the honest cooperation of every unit in the industry.

Mediation Is Hoped For in Mid-Continent Strike

Chances for a solution of the Mid-Continent Petroleum Corp. labor dispute appear more encouraging. Out of the efforts being made through a mediator it is hoped the strike may be terminated before it becomes necessary to take the issues before the formal hearing to be called by the National Labor Relations Board in Tulsa within the next 10 days.

Harvey C. Fremming, president of Oil Workers International Union, summoned his staff to meet in Tulsa last week. Assisting him are John L. Coulter, vice president, and B. J. Schafer, vice president, and E. C. Conarty, secretary-treasurer. Fremming announced the union is prepared to rewrite demands on arbitration and seniority so that features objectionable to the company may be removed; at the same time he insisted the union does not intend to make concessions on points involving principles. Fremming has promised the support of other C.I.O. unions to the strikers.

There was a recurrence of violence during the week, damage to filling stations in Tulsa, assaults and blasting of pipe lines at various points. Altogether 18 strikers have surrendered at the Tulsa County jail to relieve bondsmen who had gone on their bail pending appearance in court. As a protest against these arrests the union petitioned for grand jury hearings in Tulsa, which were denied. At present it seems unlikely that an appeal to the U. S. Attorney General will lead to the granting of a federal grand jury. Such a hearing, if granted, could consider only charges of collusion between company, city and county officials. Governor Phillips suggested, in a conference with Fremming, that the attorney general of Oklahoma be petitioned to conduct an investigation. The governor said he had planned the gradual withdrawal of troops but that recent increase in violence had induced him to strengthen the guard. Details of picketing activities have caused some friction between the union and the troops.

Civic bodies in Tulsa have been making efforts to end the dispute. If attempts at mediation fail, Fremming will likely file new charges with Nathan West of the N.L.R.B. at Washington which would result in setting a date for a hearing before the end of the month. J. C. Denton, vice president and general counsel of Mid-Continent, pointed out that the national board has yet to take a poll to determine whether or not the union members constitute a majority of company employes. Lack of the poll would not block a hearing, Denton said, but it might have some effect on the result of the hearing.

No Changes Yet Made on Depletion Allowances

WASHINGTON, D. C., Feb. 13.—No changes in the provisions for oil and gas depletion allowances are made in the revised income tax regulations just issued by the Bureau of Internal Revenue, but this matter is still under consideration and a supplement to the regulations may be issued within a few months. A large number of changes in the provisions covering depletion of oil and gas wells, mines, timber, and other natural resources have been proposed by the bureau, but the one of greatest concern to the oil and gas industry is the matter of options covered in Article 23(m)—16 of Regulations 94 issued two years ago and similar to the regulations in effect for many years. The new regulations, No. 101, have been issued under the revenue act of 1938, but no changes have been made in the entire depletion chapter, Article 23(m).

Because the new regulations must be out in advance of the filing of 1938 income tax returns on March 15, it was necessary to promulgate them before a decision was reached on the depletion chapter.

The controversial Section 16 permits the option of charging depletion to capitol or to operating expense, and almost without exception oil and gas companies have charged depletion to expense. Some officials want depletion charged to capital. One effect would be that oil and gas producing corporations would have to make annual changes in their capital stock declarations upon which excess profits taxes are based. The excess profits law is so drawn as to penalize a corporation which finds it necessary to alter its declaration of value of capital stock.

Petroleum Chemical Colloid Symposium at Norman

The School of Petroleum Engineering at the University of Oklahoma is sponsoring a colloid symposium to study the problems and relations of colloidal chemistry to the development and production of oil fields, February 27 to March 2, at Norman, Dr. Ernest A. Hauser, professor of applied colloidal chemistry at Massachusetts Institute of Technology, will conduct the symposium. Such problems as, the fundamentals involved in the treatment of rotary drilling muds to meet particular conditions; treatment of water to be used for drilling and production, as well as for artificial water-flooding which involves the removal of scale-forming compounds and inhibition of corrosion forming tendencies; colloidal properties which control the deposition of wax and formation of emulsions in oil wells, will be discussed.

Several round table conferences and discussions will be devoted to individual specific topics to acquaint separate groups with the most recent developments in practical colloidal chemistry and physics. Submission of special problems by men in the industry will be solicited for special or private discussion.

C. V. Cottingham Heads North Basin Committee

FORT WORTH, Tex., Feb. 14.—C. V. Cottingham, director of the oil and gas division of the Railroad Commission of Texas, has been selected to head the North Basin Pools Engineering Committee. He will assume his new duties on March 1 acting as permanent chairman of the committee in connection with an advisory subcommittee composed of R. R. Porterfield, Devonian Oil Co., secretary-treasurer; C. D. Vertrees, Continental Oil Co.; S. L. McDowell, Murchison & Fikes; A. S. Donnelly, Honolulu Oil Corp., and A. E. Willig, Texas Co. One representative from each participating company in the area will serve on the committee.

Pools included are Bennett, Dean, Duggan, Slaughter, Seminole and Wasson. Primary purpose of the committee will be cooperative engineering work, assembling data and witnessing potentials. Its operation will be similar to that of the engineering committees in the Goldsmith and Yates fields in West Texas and in the East Texas field. Main office will be in Midland, while the field staff will be in the Wasson pool.

C. V. COTTINGHAM

C. M. Langford Successor To C. V. Cottingham

AUSTIN, Tex., Feb. 14.—Charles M. Langford has been appointed production director and chief engineer for the Texas Railroad Commission, succeeding C. V. Cottingham. He graduated from the University of Texas in 1926 and was engaged in research work until he joined the Texas commission in East Texas in 1934.

National Oil Scouts Select Houston for Meeting

The annual convention of the National Oil Scouts Association will be held in Houston, Tex., this year, probably on May 18, 19 and 20, Charles D. Wells, chief scout for Carter Oil Co. and second vice president of the association, announced following the meeting of scouts in Dallas last week.

Acetylene Round Table New Date March 8

The round-table session of the Houston convention of the International Acetylene Association has been changed to Wednesday, March 8.

North Texas Connections Taken by Magnolia

FORT WORTH, Tex.—Magnolia Pipe Line Co. is reported to have taken over connections of 600 wells in the Burkburnett and northwest areas of Wichita County from Tucker Oil Co. of Wichita Falls.

THE MARKETS*

CRUDE OIL: *Bell Oil & Gas Co. February 10 raised its prices for crude in North Texas and the Oklahoma-Texas Red River bed 8 cents on all grades from 28 to 41 degrees and above. Kanotex Refining Co. February 11 raised its price for crude 10 cents on all grades, meeting the schedules of other purchasers in Oklahoma and Kansas. Market slightly firmer.*

REFINERY: *Mounting stocks of gasoline causing uneasiness and market weaker except in Mid-Continent, where refusal of important companies to sell at prevailing low quotations is creating a little firmness. Furnace oil accumulations reaching disturbing size, especially in Mid-Continent, where gas and fuel oil stocks are 23 per cent higher than last year.*

TANK-WAGON AND POSTED DEALER: *Socony-Vacuum made a general reduction of tank-wagon gasoline prices in New England and of tankcar prices in both New England and New York territories. Reductions at scattered points were announced by Continental, Standard of Nebraska, and Standard of Indiana.*

FINANCIAL: *Transactions in oil shares kept in a narrow range, with trend downward except for a modest rally at the close of the week. Average of 30 representative stocks for week ending February 11: High, 27.78; low, 27.09; close, 27.34. Week ending February 4: High, 27.98; low, 27.06; close, 27.68. Annual earnings are reported as follows by Carl H. Pforzheimer & Co., New York:*

	Net income	Per share
Shell Union Oil Corp.:		
1938	$11,000,000	$0.70
1937	20,668,880	1.44
National Transit:		
1938	447,650	0.88
1937	604,985	1.19
Northern Pipe Line:		
1938	29,274	0.24
1937	93,303	0.78

**Detailed information in Market Section.*

Bureau of Mines Report for December and Year

The Bureau of Mines reports that the daily average production of petroleum continued at about the 3,300,000-bbl. mark—in December it was 3,299,600 bbls., compared with 3,285,600 bbls. in November. The principal change in the state figures in December was the increase in daily average production in Illinois from 102,200 bbls. in November to 128,400 bbls. in December, partially balanced by small declines in California, Louisiana, Kansas, and other states.

The total demand for all oils declined slightly (39,000 bbls. daily) in 1938 as increases in exports could not overcome the decline in demand for fuel oil. Due to more stringent proration east of California, crude oil production was curtailed and the total for the year declined from 1,279,160,000 bbls. in 1937 to 1,213,254,000 bbls. in 1938. The apparent deficiency in supply is explainable in stocks of all oils, which declined from 564,997,000 bbls. on the beginning of the year to 555,263,000 bbls. on December 31, 1938, compared with an increase of nearly 50,000,000 bbls. in 1937.

Refined Products: The yield of gasoline, which had been averaging considerably above normal, declined to 44.4 per cent in December, compared with 45 per cent in November. The yield for 1938 was 44.3 per cent against 43.9 per cent in 1937.

Gasoline consumption continued its late season recovery, the indicated domestic demand for December being 41,649,000 bbls., or 6 per cent higher than in December, 1937. This increase insured a new record for 1938 of 521,657,000 bbls., compared with 519,352,000 bbls. in 1937. Gasoline exports ended the year at the highest level since 1930, exports and shipments for December totaling 5,423,000 bbls., and for the year, 50,198,000 bbls., or 31 per cent above 1937. The high level of demand was reflected in gasoline stocks, which increased only 2,145,000 bbls. in December; this was the smallest December increase recorded since the first comparable statistics (1934). On December 31, 1938, stocks of finished gasoline amounted to 65,949,000 bbls., compared with 69,892,000 bbls. the previous year, unfinished gasoline stocks were 5,731,000 bbls. against 7,098,000 bbls., but natural gasoline stocks increased slightly—from 4,758,000 bbls. December 31, 1937, to 4,830,000 bbls. December 31, 1938.

United States Supply and Demand—Crude Oil (Bbls.)

1938 and 1937

12 MONTHS—	TOTAL SUPPLY	TOTAL DEMAND	EXCESS DEMAND	EXCESS PCT.	DOMESTIC PRODUCTION	IMPORTS	INDICATED DOMESTIC DEMAND‡	EXPORTS	STOCKS REFINABLE CRUDE DEC. 31
1938	1,239,666,000	1,319,329,000	79,663,000	6.1	1,213,254,000	26,412,000	1,242,056,000	77,273,000	‖274,353,000
Daily average	3,396,000	3,614,000	.....	....	3,324,000	72,000	3,403,000	212,000	.....
1937	1,306,644,000	1,329,525,000	22,881,000	1.8	1,279,160,000	27,484,000	1,262,291,000	67,234,000	306,826,000
Daily average	3,580,000	3,642,000	.....	....	3,505,000	75,000	3,458,000	184,000	.....
Increase, 1938	†66,978,000	†10,196,000	.....	....	†65,906,000	†1,072,000	†20,235,000	10,039,000	†32,473,000
	†5.1%	†0.8%	.....	...	†5.1%	†3.9%	†1.6%	14.9%	†10.5%

Supply and Demand—Refinery Products—Motor Fuels (Bbls.)

12 MONTHS—	TOTAL SUPPLY	TOTAL DEMAND	EXCESS DEMAND	EXCESS PCT.	DOMESTIC PRODUCTION	IMPORTS	DOMESTIC DEMAND	EXPORTS	STOCKS DEC. 31§
1938	567,984,000	571,855,000	3,871,000	0.7	567,905,000	79,000	521,657,000	50,198,000	70,779,000
Daily average	1,556,000	1,567,000	.....	....	1,556,000	216	1,429,000	137,000	.....
1937	571,871,000	557,658,000	*14,213,000	*2.5	571,727,000	144,000	519,352,000	38,306,000	74,650,000
Daily average	1,567,000	1,528,000	.....	....	1,566,000	394	1,423,000	105,000	.....
Increase, 1938	†3,887,000	14,197,000	.....	..	†3,822,000	†65,000	2,305,000	11,892,000	†3,871,000
	†0.7%	2.5%	.....	....	†0.7%	†45.2%	0.4%	31.0%	†5.2%
Kerosene									
1938	64,580,000	63,864,000	*716,000	*1.1	64,580,000	.....	56,351,000	7,513,000	7,799,000
1937	65,308,000	63,858,000	*1,450,000	*2.3	65,308,000	.....	54,972,000	8,886,000	7,083,000
Increase, 1938	†728,000	6,000	.....	...	†728,000	.....	1,379,000	†1,373,000	716,000
	†1.1%	0.01%	.....	....	†1.1%	.....	2.5%	†15.5%	10.1%
Gas Oil and Residual Fuel Oil¶									
1938	467,731,000	456,845,000	*10,886,000	*2.4	446,746,000	20,985,000	409,214,000	47,631,000	125,619,000
1937	480,901,000	487,788,000	6,887,000	1.4	458,770,000	22,131,000	442,355,000	45,433,000	117,585,000
Increase, 1938	†13,170,000	†30,943,000	.....	....	†12,024,000	†1,146,000	†33,141,000	2,198,000	8,034,000
	†2.7%	†6.3%	.....	....	†2.6%	†5.2%	†7.5%	4.8%	6.8%
Gas Oil and Distillate Fuels									
1938	151,774,000	146,467,000	*5,307,000	*3.6	151,774,000	.....	116,564,000	29,903,000	27,873,000
1937	146,723,000	146,970,000	247,000	0.2	146,706,000	17,000	116,841,000	30,129,000	22,566,000
Increase, 1938	5,051,000	†503,000	.....	....	5,068,000	.....	†277,000	†226,000	5,307,000
	3.4%	†0.3%	.....	...	3.4%	.....	†0.2%	†0.7%	23.5%
Residual Fuel Oils									
1938	315,957,000	310,378,000	*5,579,000	*1.8	294,972,000	20,985,000	292,650,000	17,728,000	97,746,000
1937	334,178,000	340,818,000	6,640,000	2.0	312,064,000	22,114,000	325,514,000	15,304,000	95,019,000
Increase, 1938	†18,221,000	†30,440,000	.....	....	†17,092,000	†1,129,000	†32,864,000	2,424,000	2,727,000
	†5.4%	†8.9%	.....	....	†5.5%	†5.1%	†10.1%	15.8%	2.9%
Lubricating Oils									
1938	30,826,000	30,650,000	*176,000	*0.6	30,826,000	.....	21,248,000	9,402,000	7,695,000
1937	35,321,000	34,298,000	*1,023,000	*3.0	35,321,000	.....	23,323,000	10,975,000	7,512,000
Increase, 1938	†4,495,000	†3,648,000	.....	...	†4,495,000	.....	†2,075,000	†1,573,000	183,000
	†12.7%	†10.6%	.....	...	†12.7%	.....	†8.9%	†14.3%	2.4%
Petroleum Wax (Lbs.)									
1938	464,327,000	479,979,000	15,652,000	3.3	435,400,000	28,927,000	278,060,000	201,919,000	129,340,000
1937	558,569,000	529,011,000	*29,558,000	*5.6	521,640,000	36,929,000	297,288,000	231,723,000	144,992,000
Increase, 1938	†94,242,000	†49,032,000	.....	....	†86,240,000	†8,002,000	†19,228,000	†29,804,000	†15,652,000
	†16.9%	†9.3%	.....	....	†16.5%	†21.7%	†6.5%	†12.9%	†10.8%

*Excess supply. †Decrease. ‡Crude oil only. §Includes finished and unfinished refinery gasoline and natural gasolines. ¶Gas oil and fuel oil equals gas oil and distillate fuels plus residual fuel oils. Note: Total supply equals domestic production plus imports. Total demand equals domestic demand plus exports. Data on demand for refined products are based on refinery shipments. ‖ Does not include 16,467 bbls. of heavy oils in California. Comparable figures for December 31, 1937, not available.

Crude Oil Run to Stills and Total All Oils (Bbls.)

12 MONTHS—	TOTAL IMPORTS§	TOTAL EXPORTS§	TOTAL CRUDE TO STILLS	PER CENT YIELD GASOLINE‡	NATURAL GASOLINE PRODUCTION	TOTAL SUPPLY ALL OILS*	TOTAL DEMAND ALL OILS*	STOCKS ALL OILS DEC. 31*
1938	54,148,000	193,906,000	1,165,015,000	44.3	50,317,000	1,319,418,000	1,328,141,000	555,263,000
Daily average	148,000	531,000	3,192,000	...	138,000	3,615,000	3,639,000	.....
1937	57,157,000	172,834,000	1,183,440,000	43.9	49,177,000	1,388,284,000	1,342,516,000	564,997,000
Daily average	157,000	473,000	3,242,000	...	135,000	3,804,000	3,678,000	.....
Increase, 1938	†3,009,000	21,072,000	†18,425,000	...	1,140,000	†68,866,000	†14,375,000	†9,734,000
	†5.3%	12.2%	†1.6%	...	2.3%	†5.0%	†1.1%	†1.7%

*Total all oils includes crude and refined products, natural gasoline and benzol. Stocks December 31, 1938, represented 153 days' supply which compared to 154 days' on same date in 1937. †Decrease. ‡Does not include natural gasoline blended at refineries. §Includes crude oil and refinery products. In case of imports includes receipts in bond and for domestic use. All data based on Bureau of Mines reports.

FOREST CITY BASIN

(Continued from Page 27)

Granite ridge is the outstanding example) first began their rise. These anticlines were more strongly uplifted and faulted in post-Mississippian time. Later movements recurred during Pennsylvanian and Permian time. Following the Des Moines series there was renewed folding and faulting. There is considerable evidence at various places in Kansas to show that there was a general southward tilting at this time. The next important period of uplift occurred following the Missouri series, and finally the post-Pennsylvanian folding following the Virgil series. Later, in post-Permian time, the entire region was tilted westward.

All of these structural movements acted throughout the Mid-Continent area with similar results. In some areas the effect of the northwest-southeast folding predominates while in others the northeast-southwest trends are dominant but nearly always there is evidence of both lines of folding.

In northeastern Kansas the Granite ridge is the most prominent feature, and it is probable that structural trends will be found parallel to it. On the east flank of the Forest City basin, however, these trends will be greatly affected by the influence of northwesterly directed axes from the Ozark uplift.

In northern Missouri the dominant axes in the older rocks are of the Ozark family, lying northwest-southeast. The structures found at the surface, however, are of the Granite ridge family, trending northeast-southwest.

Oil Possibilities

The accumulation of oil in Kansas and Oklahoma has been determined by two factors: (1) The occurrence of source rocks, and (2) the effect of the above-described uplifts in providing effective reservoirs and structural traps.

Source rocks.—No entirely satisfactory theory has been advanced for the origin of oil and we do not know just which rocks furnished the oil in the Mid-Continent region. We do know, however, that the rocks of Kansas have produced oil, and that the same beds are present in the Forest City basin in northeastern Kansas, northwestern Missouri, southwestern Iowa and southeastern Nebraska. In addition, numerous showings of oil and gas have been reported in wells in the Forest City basin. In northeastern Kansas alone showings of oil or gas have been reported in the following formations:

Base of Permian	Burgess sand
Douglas-Pedee	Mississippi lime
Old Red (T Marmaton)	Misener sand
Peru sand	Hunton lime
Fort Scott lime	St. Peter sand
Squirrel sand	Arbuckle lime
Bartlesville sand	Basal sand

In northwestern Missouri:

Kansas City lime	Squirrel sand
Old Red	Bartlesville sand
Hancock	Burgess sand
Pennsylvania sand	Mississippi lime
Labette sand	Misener sand
Fort Scott lime	Hunton lime

St. Peter sand

In southeastern Nebraska:

Viola lime

In southwestern Iowa:

Simpson shale (Decorah)

Effect of structure.—It is thought that the post-Hunton folding affected the Granite ridge only slightly and therefore until the post-Mississippian period of folding the migration of oil was mainly toward the Ozark uplift.

The post-Mississippian erosion was so complete that the Mississippian was removed from the Granite ridge as far south as Butler County and along the higher parts of the ridge all of the older sedimentary rocks were removed as well, leaving the granite or basement rocks completely exposed. Any oil previously accumulated along the crest of the ridge was therefore dissipated. Similar truncation in the Ozarks probably caused the loss of some oil.

With deposition of the Cherokee sediments, new source rocks were provided together with new reservoir rocks, but most of these beds did not cross the Granite ridge, where erosion continued. The post-Des Moines folding and southward tilting probably furnished new traps and readjusted the fluid level in others. Oil from the overlying Pennsylvanian rocks may have accumulated in the weathered surface of the Mississippi lime ("chat") in favorable locations. Later Pennsylvanian and post-Pennsylvanian folding increased the closure of some structural traps, and if a supply of oil was available, more was probably accumulated. The post-Permian westward tilting caused a readjustment of fluid levels and possibly allowed some oil to escape to the eastward from the less pronounced traps. Some of it may have been caught by nearby traps.

Conclusions.—The Forest City basin of northeastern Kansas contains appropriate source rocks and wells have reported numerous showings of oil and gas in rocks of good reservoir characteristics. The amount of oil to be found will therefore depend on the size and history of the structural and stratigraphic traps which may exist in the basin. It seems probable that oil and gas will be found, but only the drill can answer the question "how much?"

Obituaries

JAMES McALEAR, president of the McAlear Manufacturing Co., died recently after an illness of two months.

RALPH IRVING WALDRON, 60, sales executive for the Socony-Vacuum Oil Co., Inc., died in New Rochelle, N. Y., last week.

FRED H. POLLOCK, 66, died in Tulsa, February 13. He had followed the oil fields from Pennsylvania to the Mid-Continent, arriving in Tulsa in 1917.

JAMES C. GRAY, old-time oil man of Pennsylvania and West Virginia, died last week at Caney, Kans. He was born at Smicksburg, Pa., December 22, 1853. He saw many years' service for the old Standard Oil Co. on Oil Creek and was retired 28 years ago, after 32 years of service.

FRANK H. HOYT, 70, former purchasing agent, Standard Oil Co. of New York, died last week in Fort Lauderdale, Fla. Mr. Hoyt was widely known for his golfing ability, winning more than 100 cups and medals. He joined the original Standard Oil Co. in New York in 1885 when he was 16.

MARTIN HENRY MOSIER, 83, "Grand Old Man of the Oil Industry" at the 1936 International Petroleum Exposition, died in Los Angeles February 13. He was born in Petrolia, Pa., and taught school when he was 16. He entered the fields of Pennsylvania as a pumper when 20 and in 1881 aided in construction of the first natural gas pumping station near Bradford, Pa. He moved to Tulsa in 1905, drilling the second well in the Tulsa area at Glenn Pool in 1906. He was head of Carpathia Petroleum Co., Satellite Oil Co., and M. H. Mosier Oil Co., and was interested in the Huntington Beach, Signal Hill, Santa Fe Springs and Brea-Olinda fields in California.

Export Meeting Important Event At Houston Oil Show

A meeting of manufacturers, export managers and representatives of foreign oil companies will provide valuable data to all interested in export business at the Oil-World Exposition in Houston, Tex., April 24 to 29, inclusive. According to Ed. G. Lenzner, general manager, the meeting will be held throughout the entire day of April 24. The large Convention Hall will be utilized since the interest in the use of American equipment all over the world is of particular interest both to the user of oil tools and machinery in foreign countries and to the manufacturer who supplies the equipment. Discussions will include the problems of shipment, application of design for foreign installations and ways and means of increasing export business.

The meeting will be under the auspices of the Oil Equipment Export Committee of which O. D. Small is chairman and which consists of the following personnel: D. H. Bellamore, export manager, Republic Steel Corp.; Charles T. Campodonico, chief of the commission, Argentine Government Oil Fields; J. W. Casterton, purchasing agent, Standard Oil Co. of New Jersey; J. A. de Lanoy, director of purchases, Asiatic Petroleum Corp.; R. J. Eiche, export manager, Manhattan Beach, Calif.; Clyde Ellwood, Fluid Packed Pump Co., Oklahoma City; W. G. Foster, president, Anglo-American Purchasing Co.; C. Clay Johnson, foreign sales representative, Shaffer Tool Works; W. J. Malley, American representative, Oil Well Engineering Co.; E. B. Middlekauf, purchasing agent, Texas Co.; W. J. Nutto, export manager, Reed Roller Bit Co.; J. S. Parks, purchasing agent, Atlantic Refining Co.; F. J. Petura, purchasing agent, Henry L. Doherty & Co.; T. L. Putnam, export manager, W-K-M Co.; F. C. Ripley, Jr., manager foreign sales bureau, Emsco Derrick & Equipment Co.; D. A. Rosoff, president, Amtorg Trading Corp.; S. B. Schnitter, export manager, Baker Oil Tools, Inc.; W. H. Siems, export manager, Hughes Tool Co.; A. V. Simonson, export manager, Buda Co.; H. Slater, purchasing agent, Venezuela Gulf Oil Corp.; I. I. Smolianoff, representative, heavy industries, U.S. S.R., Amtorg Trading Corp.; J. R. Taylor, purchasing agent, Socony-Vacuum Corp.; Thomas E. Ward, president, Oilfield Equipment Co., Inc.; J. A. Whitely, purchasing agent, Pan American Petroleum & Transport Co.; George W. Young, purchasing agent, Standard Vacuum Oil Co.; Val R. Wittich, Jr., export sales representative, New York.

Petroleum Research Committee Of I.P.A.A. Appointed

Personnel of the Committee on Petroleum Research of the Independent Petroleum Association of America has been announced by Charles F. Roeser, Fort Worth, Tex., president.

This committee is the successor to the Public Relations Committee, and Burdette Blue, Indian Territory Illuminating Oil Co., Bartlesville, Okla., is chairman. Mr. Blue was chairman of the predecessor committee for two years. Frank M. Porter, vice president, Wirt Franklin Petroleum Corp., Oklahoma City, is vice chairman. Other members are:

R. C. Jopling, vice president, Philips Petroleum Co., Bartlesville, Okla.; Harry Leonard of Harry Leonard, Inc., Roswell, N. M.; R. J. Daugherty, Cities Service Oil Co., Bartlesville, Okla.; T. C. Johnson, Wichita, Kans.; Charles A. Warner, Houston Oil Co., Houston, Tex.; C. A. Johnson, president, Holly Oil Co., Los Angeles; J. S. Noland, Barnsdall Oil Co., Tulsa; Frank Long, vice president, Oklahoma Natural Gas Co., Tulsa; Jake L. Hamon, Cox & Hamon, Dallas, Tex., and John W. Naylor, Fort Worth, Tex.

The recently established Petroleum Research Bureau of the association functions under the general direction of the Petroleum Research Committee. Major attention is being given at this time to the collection and dissemination of factual information on the oil- and gas-producing industries.

INTERNATIONAL

Venezuela Output Below December 5. Above Year Ago

Venezuela's crude oil production during January dropped slightly below the December output but was more than 1,000,000 bbls. higher than for the same month a year ago. The country produced an estimated total of 16,242,124 bbls. during January, a daily average of 523,941 bbls. In the preceding month the total was estimated at 16,472,894 bbls., a daily average of 531,384 bbls. In January, 1938, the country produced only 15,103,985 bbls., or a daily average of 487,225 bbls. Only a few fields in Venezuela produced more oil in January than in December. These included the Cumarebo field, Tarra, Quiriquire, Temblador, Concepcion, La Paz and El Mene. Losses were incurred by Lagunillas, Tia Juana, La Rosa, Mene Grande, Bachaquero and Pedernales.

As in recent months Standard Oil Co. of Venezuela, Lago Petroleum Corp. and Creole production in the Lake Maracaibo district is not segregated by fields in the accompanying table. The companies, all subsidiaries of Standard Oil Co. of New Jersey either directly or indirectly, produce in Lagunillas, Tia Juana, and La Rosa among the Lake Maracaibo fields, but it is all shown under the Lagunillas total.

The accompanying table shows the details of January production other than the exceptions listed in the preceding paragraph:

VENEZUELA PRODUCTION
(By Fields in Barrels)

Field	January 1939	December 1938	Daily aver. January 1939
Lagunillas	*8,192,981	*8,234,020	264,290
Tia Juana	2,378,780	2,510,813	76,735
Quiriquire	2,228,297	2,179,649	71,881
La Rosa	971,543	980,079	31,340
Mene Grande	879,065	934,697	28,357
Tarra	474,715	471,147	15,313
Bachaquero	384,640	409,621	12,408
Cumarebo	220,912	210,884	7,126
Pedernales	155,703	191,797	5,023
Temblador	172,948	169,429	5,579
Concepcion	76,044	75,897	2,453
La Paz	53,300	53,246	1,720
El Mene	53,196	51,615	1,716
Total	16,242,124	16,472,894	523,941
Total January, 1938	15,103,985		
Daily average January, 1938	487,225		
Daily average December, 1938	531,384		
BY COMPANIES			
Venezuela Oil Concessions	5,438,716	5,751,119	175,443
Lago Petroleum Corp.	4,477,461	4,350,641	144,435
Standard of Venezuela	2,919,743	2,919,954	94,185
Mene Grande Oil Co.	1,944,000	1,941,000	62,710
Caribbean Petroleum Co.	879,065	934,697	28,357
Colon Development Co.	474,715	471,147	15,313
British Controlled	53,196	51,615	1,716
Northern Venezuela Pet. Co.	55,228	52,721	1,782
Total	16,242,124	16,472,894	523,941

Mexican Settlement May be Hastened By Developments

The revelation in Washington last week that President Roosevelt has clarified his attitude on Mexican expropriation, taking the stand that international law demands adequate indemnification, may hasten settlement. It was understood President Roosevelt had told Mexican Ambassador Najera his view was in no detail different from that of Secretary of State Hull who has frequently repeated that prompt and adequate indemnification is essential. United States oil companies have been reluctant to deal directly with the Mexican Government in view of the impression there that Mexico had the sympathy of President Roosevelt.

Relay of President Roosevelt's attitude is believed to have caused a renewal of efforts to reach a solution. The president, according to reliable sources, told the Mexican ambassador the United States, in recognizing Mexico's right as a sovereign power to expropriate, did not in any sense waive the rights of the American owners under international law to "prompt, just and effective compensation." He also stated, it was said, that Mexico's barter of oil taken from the expropriated properties to countries opposed to democracy had aroused resentment among the American public.

The stand of the president may open the way for a compromise. It was understood Donald R. Richberg, counsel for Standard Oil Co. of New Jersey, and Patrick J. Hurley, representing Consolidated Oil Corp. (Sinclair) may jointly or individually discuss the issue directly with President Cardenas of Mexico.

Meanwhile, an independent company in Mexico is facing threat of expropriation and facts about another barter deal with Germany leaked across the border. An embargo was filed February 10 against the Compania Petrolera Imperial, shutting down all operations pending payment of a 700,000-peso award of the Mexican Labor Board to employes.

The latest barter deal with Germany is exclusive of that made through W. R. Davis of New York involving 17,000,000 bbls. of Mexican oil and will bring to Mexico machinery for a newsprint mill costing between $2,000,000 and $2,500,000. The deal includes arrangements for construction of the newsprint factory at Toluca by a German firm. The plant will have capacity of 30,000 tons annually. Pending completion of the plant in Mexico, Germany is reported to have assumed obligation to supply 10,000 tons of German produced newsprint.

The new barter arrangement is reported to have been negotiated by Carlos Rekowski, representing Otto Behr & Co. of Bremen. The proposed 3,000,000-peso barter deal with Italy by which Mexico would have shipped petroleum in exchange for rayon products is understood to have floundered. Italy claimed its rayon exports were readily salable for strong currency.

The week's most interesting Washington development was rejection of a resolution in the House which would have required Secretary Hull to answer specific questions regarding the Mexican expropriation. State Department told House committeemen delicate negotiations with Mexico might be hampered under the procedure proposed in the resolution by Representative Martin J. Kennedy of New York. The inquisition was prompted, to a large extent, by publication of an editorial in a Mexico City newspaper declaring Ambassador Daniels had suppressed a strongly worded note from his Government just before the Pan-American conference at Lima. Secretary Hull told the House committee several firm notes had been delivered and he said later at a press conference conversations had been proceeding for a week between the companies, the Mexican Government and the United States Government. After rejection of his resolution, Representative Kennedy issued a statement demanding that Mr. Hull's interview with the foreign affairs group be made public.

A new proposal was reported from Mexico during the week that the government would offer expropriated companies about $50,000,000 indemnity, represented as the result of an inventory and evaluation by Mexican engineers. The figure disregards entirely any value for the subsoil rights which the Cardenas administration has contended passed to the government by the Constitution of 1917.

Reports from Mexico City indicate the barter arrangements for disposition of Mexican petroleum to Germany, Italy and Japan are far from satisfactory.

United Kingdom Petroleum Imports Rise to New Peak

Petroleum imports by the United Kingdom rose to a recent peak of 84,567,940 bbls. during the first 11 months of 1938, an increase of nearly 4 per cent over receipts for the same period in 1937. November imports of 7,188,300 bbls. were lower by 526,800 bbls. than for the same month in the preceding year.

Excepting the declines of Mexico and Peru, the sources of supply have undergone comparatively little change. The United States has increased its participation in the matter of supplying petroleum to the United Kingdom by 52 per cent. Mexico shows a decline of 59 per cent, Peru 71 per cent and Rumania 37 per cent.

Venezuela shipments have increased 58 per cent and receipts from Iraq are up nearly 20 per cent.

Details on the United Kingdom's petroleum trade for the first 11 months of 1938 follow:

UNITED KINGDOM PETROLEUM IMPORTS
(Figures in bbls. of 42 gallons)

	January-November 1938	1937
Netherlands West Indies	29,321,370	29,924,260
Iran	16,186,940	16,596,140
United States	14,257,540	9,374,120
British West Indies	5,236,600	3,554,260
Iraq	3,779,030	3,146,230
Venezuela	3,709,000	2,338,770
Rumania	2,370,030	3,799,660
U. S. S. R.	2,161,140	2,173,710
Mexico	1,704,230	4,164,260
Netherlands East Indies	672,660	636,260
Peru	625,060	2,170,000
Other British	1,238,970	674,060
Other foreign	3,305,370	3,035,800
Total	84,567,940	81,587,530

Refinery Expansion

National Refining Co. Considers Modernizing Kansas Plant

In formulating plans for the coming year, National Refining Co. is giving consideration to plans for modernizing the refinery at Coffeyville, Kans. Plants operated by the company at Marietta and Findlay were expanded in recent years.

Lion Oil Holds Option on Atlas Pipe Line Corp.

Contrary to what has been previously reported Lion Oil Refining Co. has not taken over active management of Atlas Pipe Line Corp. and subsidiary units. A correct statement of the situation is that Lion Oil Refining Corp. holds an option from persons owning a majority of the outstanding common stock of Atlas Pipe Line Corp. to purchase that stock; this option has not been exercised. R. E. Meinert and E. P. Marrable have been elected officers of the Atlas Pipe Line Corp.; these men have been associated with the Lion company but have not taken steps to assume the management of the Atlas Pipe Line Corp. and its subsidiaries.

California Standard Buys Houdry Process License

Houdry Process Corp. announces that it has sold a license under its catalytic cracking rights to the Standard Oil Co. of California. Under the terms of the agreement Standard Oil Co. of California obtains the rights to operate under the various Houdry catalytic patents, present and future. Standard Oil of California is starting work immediately on application of the processes to California crudes.

Taylor Adds Unit for Aviation Gasoline

CORPUS CHRISTI, Tex.—Taylor Refining Co. (Corpus Christi Refining Co.) has placed in operation at its Corpus Christi refinery a complete new unit, consisting of a 10,000-bbl. crude unit, a 5,000-bbl. naphtha rerun unit, and a 3,000-bbl. natural gasoline stabilizing unit. The installation includes a new furnace and pipe still, fractionating towers, a new water cooling tower, new electrically powered pumping equipment, electric power generating equipment and other auxiliary facilities. Operation of the plant is designed for the production of aviation gasoline.

Gasoline to Puerto Rico

Shipments of gasoline to Puerto Rico from refineries in continental United States during 1938 were the greatest on record, totaling 696,000 bbls., an increase of 31 per cent over the preceding year, according to a statement by the Puerto Rican Trade Council, based on U. S. Department of Commerce figures.

Chairman of Refinery Equipment Committee

Arthur E. Pew, Jr., of Sun Oil Co., Philadelphia, Pa., has been appointed chairman of the American Petroleum Institute 1939 Committee on Standardization of Refinery Equipment. R. P. Anderson, of the Institute staff, is secretary. Announcement of the appointments was made by N. E. Loomis, of Standard Oil Development Co., New York, chairman of the Institute's Central Committee on Refinery Technology.

Membership includes C. C. Ashley, Shell Oil Co., San Francisco, Calif.; D. G. Brandt, Cities Service Oil Co.; New York; L. L. Davis, Continental Oil Co., Ponca City, Okla.; A. J. Ely, Standard Oil Development Co., Elizabeth, N. J.; E. W. Gard, Union Oil Co. of California, Los Angeles, Calif.; J. G. Glasgow, Gulf Oil Corp., Pittsburgh, Pa.; L. M. Goldsmith, Atlantic Refining Co., Philadelphia, Pa.; John S. Hess, Sinclair Refining Co., New York; K. V. King, Standard Oil Co. of California, San Francisco; W. D. Kinsell, Pure Oil Co., Chicago; R. C. Powell, Texas Co., New York; George W. Watts, Standard Oil Co. (Indiana), Chicago; H. F. West, Standard Oil Co. (Ohio), Cleveland; and M. P. Youker, Phillips Petroleum Co., Bartlesville, Okla.

North Permian Fields to Get New Refinery and Pipe Line

FORT WORTH, Tex.—Plans for the erection of a 3,000-bbl. refinery at Levelland, Hockley County, West Texas, and the laying of a pipe line to the Slaughter, Duggan and Dean fields were completed here this week. W. D. Richardson of Fort Worth, who recently resigned as vice president of Cosden Petroleum Corp., is president of the newly formed Motor Fuels Corp. which will build the refinery. The pipe line for the pools will be known as the Plains Pipe Line Corp. While closely affiliated, the pipe line and refinery are separate concerns.

The Levelland refinery will cost approximately $185,000 and will include cracking facilities. Contracts for its erection have not been let, but it is expected that the plant will be built by the company. Construction is expected to be under way by the latter part of the month. Tom Lumly, formerly engineer for Cosden at its Big Spring refinery, will be plant superintendent.

The new carrier will be the first outlet for these pools, excepting that which is being trucked into Levelland for processing in a small refinery. Approximately 35 miles of line will be laid at a cost of some $100,000.

T. J. Sullivan in Charge of Gulf Oil Corp. Texas Refineries

PORT ARTHUR, Tex.—T. J. Sullivan, general superintendent of Texas refineries for the Gulf Oil Corp., has been named assistant general manager of the company's manufacturing department, it was announced today.

Sullivan's offices will be in Pittsburgh. He will be replaced by B. H. Barnes, his assistant since 1935.

I. W. Miller Buys Power Refinery

The entire assets of the Power Oil & Refining Co. at Centralia, Ill., which included the refinery, were sold at public auction there for a bid of $21,500. Purchaser of the refinery was I. W. Miller of St. Louis. Purchase of the property must now be approved in federal court.

Pipe Line Activity

NEW HUMBLE LINE GIVES OUTLET TO FLAG LAKE FIELD

Shown here is Humble Pipe Line Co. pump station being completed in the Flag Lake field of Henderson County, eastern Texas. The company recently completed a 20-mile line from the field to its station at Mildred in Navarro County, to give the field its first pipe line outlet since its discovery late in 1937. Activity in the field, which now contains 17 producers, has been slowed somewhat due to lack of outlet. Thus completion of the new 4- and 6-inch line is expected to result in a greater activity.

Surveying Right of Way From East White Point

HOUSTON, Tex.—Republic Pipe Line Co. is surveying right of way for a 6-inch welded oil line from the East White Point field in San Patricio County to the company's terminal on the Corpus Christi ship channel.

Second Pipe Line Outlet Assured for Wasson Pool

MIDLAND, Tex.—Second new pipe-line outlet for the Wasson and Denver fields and other northern Permian basin fields was assured following announcement of Aloco Oil Co., of Dallas, it would build a 30-mile, 6-inch line from the field to connect with Atlantic Pipe Line Co.'s line at Hobbs, New Mexico. Preliminary work is to be started this week. The project will involve laying a large gathering system in the Wasson field and possibly a branch line to the nearby Bennett field. The Aloco line will deliver oil to the Atlantic Petroleum Purchasing Corp. at Hobbs, the latter having contracted to purchase a maximum of 5,000 bbls. daily for two years.

Humble Starts Laying Its Benavides Line

CORPUS CHRISTI, Tex.—Humble Pipe Line Co. started work the past week on laying its 8-inch pipe line from its Benavides (Duval County) station on its main line to the new Kelsey field being developed by Humble Oil & Refining Co. in southeastern Jim Hogg and southwestern Brooks County. The line will be approximately 50 miles.

Natural Gasoline

Recent Report Shows Decreased Natural Gasoline Production

The production of natural gasoline declined materially in December, 1938, according to a report prepared by the Bureau of Mines. The daily average in December was 5,887,000 gallons, compared with 5,942,000 gallons in November. The principal decreases occurred in the Oklahoma City and Kettleman Hills fields. The total production in 1938 was 2,113,314,000 gallons, 2 per cent above 1937, but 6 per cent below the record total of 2,233,688,000 gallons in 1929.

Stocks continued to decline, totaling 202,860,000 gallons on December 31, a decrease of 38,304,000 gallons during the month, but an increase of 3,024,000 gallons over the year.

Shipments to jobbers and retailers decreased from 12,684,000 gallons in November to 10,878,000 gallons in December, but exports increased from 18,438,000 gallons to 21,462,000 gallons.

The average vapor pressure increased seasonally in respect to refinery shipments, but decreased for exports and shipments to jobbers and retailers. The weighted average for all movements was 20.6 pounds compared with 20.1 pounds in November, and 21.4 pounds in December, 1937.

DECEMBER RECEIPTS AND DELIVERIES BY DISTRICTS

(Thousands of gallons)

	Dec., 1938	Nov., 1938	Jan.-Dec., 1938	Jan.-Dec., 1937	At refineries
East Coast	.....	.....	.....	.....	3,780
Appalachian	7,619	6,573	67,625	72,056	462
Illinois, Michigan, Kentucky	1,363	1,171	12,812	12,319	4,242
Oklahoma	37,777	37,896	468,460	492,290	1,638
Oklahoma City	9,762	10,617	138,372	166,187	.....
Osage County	4,497	4,162	50,851	56,086	.....
Seminole	9,380	9,381	118,606	121,838	.....
Rest of state	14,138	13,736	160,631	148,179	.....
Kansas	5,612	5,044	54,133	57,026	.....
Texas	57,408	55,493	655,835	615,281	5,208
Gulf	5,477	5,653	62,279	37,997	4,242
East Texas	14,399	14,238	185,475	185,313	.....
Panhandle	22,198	20,615	230,919	230,405	.....
North Texas	2,163	2,113	25,562	25,596	.....
West Central	6,112	6,066	69,646	70,195	.....
Rest of state	7,059	6,808	81,954	65,775	.....
Louisiana	7,931	7,299	86,693	106,415	84
Arkansas	2,207	2,088	24,235	11,285	420
Rocky Mountain	7,216	7,144	79,529	74,868	2,898
California	55,457	55,540	663,992	623,894	120,624
Huntington Beach	3,473	3,426	42,453	41,330	.....
Kettleman Hills	15,873	16,218	186,749	182,894	.....
Long Beach	7,839	7,700	93,209	84,298	.....
Santa Fe Springs	5,044	4,985	63,284	63,912	.....
Ventura Avenue	5,253	5,105	57,273	59,897	.....
Rest of state	17,975	18,106	221,024	191,563	.....
Total	182,490	178,248	2,113,314	2,065,434	139,356
Daily average	5,887	5,942	5,790	5,659	..
Total (thousands of barrels)	4,345	4,244	50,317	49,177	3,318
Daily average	140	141	138	135	.....

PRODUCTION AND STOCKS OF NATURAL GASOLINE

(Thousands of gallons)

	Deliveries: To refineries	Deliveries: To refinery-owned bulk plants	Deliveries: To jobbers and retailers	Deliveries: Exports	Receipts: At refineries	Receipts: At refinery-owned bulk plants	Receipts: By jobbers and retailers
East Coast	.....	.....	.....	.....	3,798	17	19
Appalachian	4,456	317	2,126	162	2,883	319	1,885
Ind., Ill., Ky., etc.	1,210	.....	257	.....	21,523	3,475	1,840
Oklahoma	32,503	1,232	2,168	269	21,196	55	1,643
Kans., Mo., etc.	3,091	172	169	.....	16,007	1,149	255
Texas Inland	39,746	3,481	3,276	140	39,825	154	2,801
Texas Gulf	23,684	.....	177	17,405			
La. and Ark.	4,936	416	1,789	.....	5,188	416	1,569
Rocky Mountain	6,476	10	178	.....	5,682	43	128
California	51,226	.....	738	3,486	51,226	.....	738
Total	167,328	5,628	10,878	21,462	167,328	5,628	10,878
Daily average	5,398	182	351	692	5,398	182	351
Total (thousands of bbls.)	3,984	134	259	511	3,984	134	259
Average V.P.	21.4	17.7	15.9	17.1	21.4	17.7	15.7

Ohio Oil Co. Is Building Plant at Cotton Valley

Construction of an experimental distillate recovery and gas recycling plant is under way in the Cotton Valley field of Webster Parish, North Louisiana. The unit is being installed by the Ohio Oil Co. as part of a cooperative project supported by a majority of producers in the field.

Operation, scheduled to begin early in the spring, will furnish data for the pressure maintenance plan currently under consideration for the field as a whole. The experimental unit comprises a 600-hp. compressor capable of handling 12,000,000 cu. ft. of gas daily at the proposed operating pressures. It is located on the Ohio Oil Co. A. H. Gray lease in SW NW Section 26-21-10. Two, and possibly three, wells producing from the Bodcaw sand of the lower Marine formation, will be used in the test runs on distillate extraction and return of residue gas to the reservoir.

Construction Started on Long Lake Field Recycling Plant

DALLAS, Tex.—Construction of the Champlin & Bass, Inc., and associates distillate recovery and recycling plant is now under way in the Long Lake field of Anderson and Freestone counties, East Texas. Gas capacity of the plant will be 15,000,000 cu. ft. daily and compression equipment will consist of a 600-hp., angle-type compressor. Site of the plant is the John W. Flocke lease, James Madden Survey, in the northern part of the field.

Gas from two distillate wells on the Flocke tract will be processed, the residue gas being returned to the Woodbine sand. The plant is the second for the field, Byrd-Frost, Inc., having placed a like plant in operation in 1938. In the Grapeland field of Houston County, American Liberty Oil Co. also has started construction of a recycling plant.

Duval Completes Installation of Equipment at Benavides

CORPUS CHRISTI, Tex.—Duval Gasoline Co. has completed installation of additional equipment at its plant in the Benavides field, Duval County, that will increase the capacity of the plant from 6,000,000 cu. ft. to 9,000,000 cu. ft. daily. New equipment includes a 500-horsepower angle type compressor, having three 21-inch cylinders, giving the plant a total of 1,600 horsepower; an additional scrubber; a new water cooling tower; electrically powered circulating and water pumps, and a new electrical power generating plant with a 5 kw. 125-volt 40-ampere generator driven by an eight-cylinder, 240-horsepower gas engine. Making up the total of 1,600 horsepower in the compressor plant are two 400-horsepower compressors, one 300-horsepower generator, and the new 500-horsepower unit.

Shell and Coltexo Planning New Plant for Wasson Pool

MIDLAND, Tex.—Prospect of a new natural gasoline plant for the Wasson and Bennett fields of Gaines and Yoakum counties was seen here this week as preliminary surveys were completed. The proposed plant is to be jointly built by Shell Petroleum Corp. and Coltexo Corp. of Monroe, La. Plans call for the erection of a 17,000,000 cu. ft. absorption-type plant on the eastern edge of the Wasson field, centrally located between the Wasson and Bennett pools on Shell's George Baumgart lease. Neither of the two fields at present has gasoline plants. The gas at Wasson and Bennett is typical of West Texas, being sour and of comparatively low gasoline content. At present some 10,000,000 cu. ft. is available for processing.

Natural Gas

Columbia Gas & Electric Files Integration Plan

WASHINGTON, D. C.—Application for approval of a plan of integration under the Holding Company Act by Columbia Gas & Electric Corp. was announced by the Securities and Exchange Commission.

The plan proposes that Atlantic Seaboard Co., only subsidiary of Columbia which is a holding company, will sell the stocks and indebtedness which it owns of Amere Gas Utilities Co., Virginia Gas Distribution Corp. and Virginia Gas Transmission Corp. to Columbia. These three companies will become 100 per cent direct-owned subsidiaries of Columbia, and Atlantic Seaboard will cease to be a holding company.

Fayette County Gas Co. and Manufacturers Light & Heat Co. will cease to control any other companies. These companies now own all the stock in Fayette Gas Fuel Co. and Sewickley Gas Co., each of which has no assets and will be dissolved.

United Fuel Gas Co., which now owns approximately 71.6 per cent of outstanding stock of Big Marsh Oil Co. will transfer that stock to Columbia in partial liquidation of its indebtedness to that corporation.

Eastern Pipe Line Co. will sell its physical assets to Home Gas Co. and Eastern Pipe Line Co. will be dissolved.

Three-Judge Federal Court To Pass on Kansas Law

KANSAS CITY, Mo.—A three-judge federal court is to hear February 21 an action which challenges constitutionality of gas proration in southwestern Kansas. The action is that of Republic Natural Gas Co., a Delaware corporation, which has questioned validity of the Kansas Corporation Commission's regulations in prorating production in the Hugoton gas field.

Judge S. G. Bratton of the tenth federal Circuit Court of Appeals, Judge Edgar S. Vaught of Oklahoma and Judge Richard J. Hopkins of Kansas will hear the case.

D. S. Keenan Succeeds The Late S. W. Meals

Daniel S. Keenan has been elected president of Carnegie Natural Gas Co. and Apollo Gas Co., succeeding the late Samuel S. Meals.

Mr. Keenan has been vice president of these companies, which are subsidiaries of United States Steel Corp., since May, 1938, and previously had been associated for many years with the Philadelphia Co. interests and United Carbon Co., Charleston, W. Va.

Programs and Meetings

Oklahoma A.P.I. Chapter Hears Slim Hole Talk

More than 225 oil men attended the regular monthly meeting of the northeastern Oklahoma chapter of the A.P.I. held at the Mayo Hotel, Tulsa, February 8. Interest in the meeting topic, "Slim-Hole Drilling Program," caused many oil men from surrounding towns to come.

After outlining the development of slim-hole drilling, Carl White, of the Franks Manufacturing Co., speaker for the evening, pointed out that the primary justification for its development is its low cost. Due to the relatively low price of oil and low recoveries per acre in many pools, a reduction in the cost of drilling and equipping wells is imperative. In wildcat drilling the ratio of eight dry holes to one producing well demands that formation samples necessary for correct geologic information be secured at a minimum cost. Many areas having an expected recovery of from 5,000 to 8,000 bbls. per acre, with a drilling and equipping cost of from $35,000 to $40,000 per well and a lifting cost of 25 cents per barrel, are being neglected. By using a rotary machine designed for drilling smaller holes which carries its own derrick, loses little time in moving, has a low first cost, and runs smaller casing, fields may be more profitably drilled, according to Mr. White. A major saving in the cost of water-flooding programs is also possible through the use of the smaller hole.

Carl White

Reid W. Bond, of the Shell Petroleum Corp., meeting chairman, announced that N. M. Hutchinson, Bartlesville, chief production engineer for the Cities Service Oil Co. and chairman of the Mid-Continent A.P.I. chapter, had appointed J. S. Montgomery, Bartlesville, assistant production superintendent of Phillips Petroleum Co., as vice chairman of the Nowata district. L. B. Hicks, Bartlesville, Cities Service company, was appointed assistant vice chairman of the same area.

Speakers for the March 8 meeting in Tulsa will be announced later by the program committee, which is headed by R. S. Knappen, of the Gulf Oil Corp., Tulsa.

A.P.I. Public Relations Committee Organizing

The American Petroleum Institute committee on public relations is to hold its organization meetings during March.

The temporary organization is to be completed by February 15, with chairmen and associates in 13 regional committees as follows:

Region 1. San Francisco — Washington, Oregon, California, Nevada, and Arizona; Chairman Philip Patchin, Standard Oil Co., San Francisco.

Region 2. Denver—Montana, Wyoming, Utah, Colorado, Idaho, and New Mexico; Chairman George D. Olds, Jr., Continental Oil Co., Denver.

Region 3. Minneapolis, Minn.—North and South Dakota, Minnesota, Nebraska, and Iowa; Chairman Paul D. Ryan, Pure Oil Co., Chicago.

Region 4. Tulsa—Kansas and Oklahoma; Chairman Ray E. Miller, Hanlon-Buchanan, Inc., Tulsa.

Region 5. Dallas—Texas and Louisiana; Chairman Roy B. Jones, Panhandle Producing & Refining Co., Wichita Falls.

Region 6. St. Louis—Missouri and Arkansas; Chairman Carl Barker, Shell Petroleum Corp., St. Louis.

Region 7. Chicago—Illinois, Indiana, Wisconsin, and Michigan; Chairman Conger Reynolds, Standard Oil Co. (Indiana), Chicago.

Region 8. Louisville or Birmingham — Kentucky, Tennessee, Mississippi, Alabama, Georgia, and Florida; Chairman R. L. Heaton, Standard Oil Co. of Kentucky, Louisville.

Region 9. Washington, D. C., or Richmond, Va.—Maryland, District of Columbia, West Virginia, Virginia, North and South Carolina; Chairman Northrop Clarey, Standard Oil Co. of New Jersey.

Region 10. Cleveland; Chairman Eric V. Weber, Eureka Oil Co., Cincinnati.

Region 11. Philadelphia — Delaware, Pennsylvania, and New Jersey; Chairman J. C. Welliver, Sun Oil Co., Philadelphia.

Region 12. New York, New York; Chairman H. F. Parsons, Tide Water Associated Oil Co., New York.

Region 13. Boston—Maine, New Hampshire, Vermont, Massachusetts, Connecticut, and Rhode Island; Chairman Eben Griffiths, Socony-Vacuum Oil Co., Inc., New York.

W. S. S. Rodgers, president, Texas Corp., is general chairman; Victor H. Scales, director of public relations, A.P.I. secretary, and G. E. Everett, who resigned from W.P.R.A. last week, becomes an assistant to Mr. Scales at New York.

John F. O'Donohoe Elected North Texas President

John F. O'Donohoe, president of Petroleum Producers Corp., was named president of the North Texas Oil and Gas Association, at a meeting of the directors at Wichita, Kans. Others elected were J. H. S. Bonner, president of Bonner Oil Co., vice president; John W. Thomas, president and general manager of Deep Oil Development Co., second vice president. D. G. Gray was renamed executive vice president.

Mr. O'Donohoe moved to Wichita Falls from Mississippi in 1909 as a scout with J. M. Guffey Co., now Gulf Oil Corp. In 1916 he went with Texas Co. as head of the lease and land department. He was named manager of United Producers Co. in 1919 and was made president of Petroleum Producers Co. in 1921.

The North Texas Oil and Gas Association will hold its ninth annual meeting in Wichita Falls, Saturday, February 25. The meeting will consist of a luncheon and business session at noon, and banquet and entertainment during the evening.

CALENDAR

February

LIQUEFIED PETROLEUM GAS ASSOCIATION, INC., annual meeting, Hotel Biltmore, Oklahoma City, Okla., February 20-22.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS AND LOUISIANA ENGINEERING SOCIETY, joint meeting, St. Charles Hotel, New Orleans, La., Feb. 23-25.

NORTH TEXAS OIL AND GAS ASSOCIATION, annual meeting, Wichita Falls, Feb. 25.

NATIONAL ASPHALT CONFERENCE, Los Angeles, Calif., week of February 27.

March

AMERICAN SOCIETY FOR TESTING MATERIALS, committee week and regional meeting, Deshler-Wallick Hotel, Columbus, Ohio, Mar. 6-10.

INTERNATIONAL ACETYLENE ASSOCIATION, 39th annual convention, Houston, Tex., Mar. 8-10.

WELDING CONFERENCE AND SHORT COURSE, University of Oklahoma, Norman, Okla., Mar. 9-10.

AMERICAN PETROLEUM INSTITUTE, spring meeting of Southwestern District Division of Production, Plaza Hotel, San Antonio, Tex., Mar. 16-17.

WESTERN PETROLEUM REFINERS ASSOCIATION, annual meeting, San Antonio, Tex., Plaza Hotel, Mar. 20-22.

SOCIETY OF EXPLORATION GEOPHYSICISTS, annual meeting (joint meeting with A.A.P.G. March 22), Oklahoma City, Huckins Hotel, March 21-23.

AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS, 24th annual meeting, Skirvin Hotel, Oklahoma City, Okla., Mar. 22-24.

April

AMERICAN CHEMICAL SOCIETY, Baltimore, Md., April 3-7.

AMERICAN PETROLEUM INSTITUTE, spring meeting of eastern district, Division of Production, William Penn Hotel, Pittsburgh, Pa., April 4-5.

AMERICAN PETROLEUM INSTITUTE, spring meeting of Pacific Coast district, Division of Production, Biltmore Hotel, Los Angeles, Calif., April 11.

NATIONAL PETROLEUM ASSOCIATION, semi-annual meeting, Hotel Cleveland, Cleveland, Ohio, April 13-14.

AMERICAN PETROLEUM INSTITUTE, Division of Production, Mid-Continent district, Skirvin Hotel, Oklahoma City, Okla., April 18-19.

OIL-WORLD EXPOSITION, Houston, Tex., April 24-29.

May

PETROLEUM ELECTRICAL SUPPLY ASSOCIATION AND PETROLEUM INDUSTRY ELECTRICAL ASSOCIATION, Rice Hotel, Houston, Tex., May 2-4.

NATURAL GASOLINE ASSOCIATION OF AMERICA, Hotel Tulsa, Tulsa, Okla., May 3-4-5.

AMERICAN PETROLEUM INSTITUTE, ninth midyear meeting, Roosevelt Hotel, New Orleans, La., May 15-18.

NATURAL GAS SECTION, A.G.A., annual meeting, Tulsa, May 8-11.

WORLD AUTOMOTIVE ENGINEERING CONGRESS, sponsored by S.A.E. for New York (May 22-26), Indianapolis (May 20), Detroit (May 31-June 2), San Francisco (June 6-8), May 22-June 8.

NATIONAL ASSOCIATION OF PURCHASING AGENTS, annual convention (Oil Company Buyers' Group), Fairmont Hotel, San Francisco, Calif., May 21-25.

June

PENNSYLVANIA GRADE CRUDE OIL ASSOCIATION, Hotel Hershey, Hershey, Pa., June 15-16.

THIRTEENTH INTERNATIONAL CONGRESS OF CARBIDE, ACETYLENE, OXYACETYLENE WELDING AND ALLIED INDUSTRIES, Munich, Germany, June 25-July 1.

ENGINEERING and OPERATING

In This Issue

UNITIZATION CONSERVES PRESSURE IN BILLINGS-WILCOX POOL
By Harry F. Simons ..... *Page 44*

Advantages to be had as the result of unit operation in the early part of the productive life of an oil reservoir are set forth in a review of practices followed by major companies at a northern Oklahoma pool.

TECHNICAL CONTROL REQUIRED IN THE MANUFACTURE OF GREASES
By W. A. Lutz, H. A. Ambrose, and W. A. Gruse ..... *Page 49*

In the second half of a paper presented before the National Lubricating Grease Institute the authors discuss bleeding and oil separation, chemical stability, specifications, and service data.

DRILLING CONTRACTOR DESIGNS HIS OWN ROTARY DRILLING RIGS
By Harry F. Simons ..... *Page 55*

Features of mechanical rotary rigs built by a contractor with 10 years' experience in designing and building drilling equipment are described with special attention paid to details of construction.

GAS LIFT AS A PRODUCTION METHOD IN THE EAST TEXAS FIELD
By W. N. Rees ..... *Page 66*

A comprehensive study of gas lift methods applied to the production of oil in East Texas and elsewhere has been made by the author. Important phases of this technique are discussed with particular consideration given to recent improvements in practices and equipment.

SAFETY—IN MACHINERY DESIGN; A GENERAL WARNING ..... *Page 75*

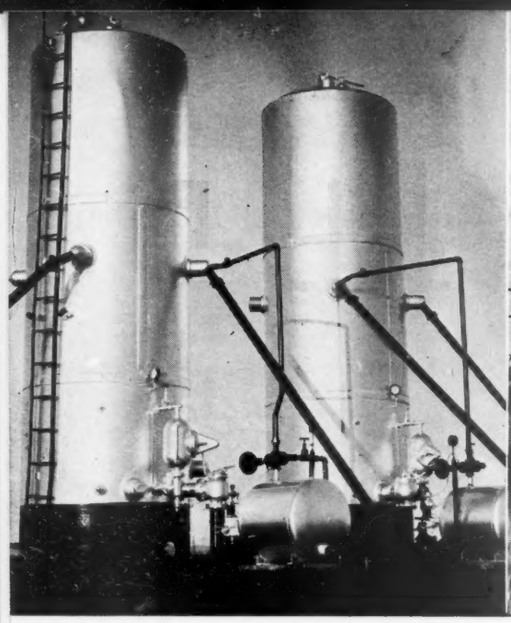
Attention is called to what can be accomplished in decreasing accidents on producing properties by means of instructions, signs, and convenient facilities in connection with pumping equipment.

OPERATING IDEAS ..... *Page 53*

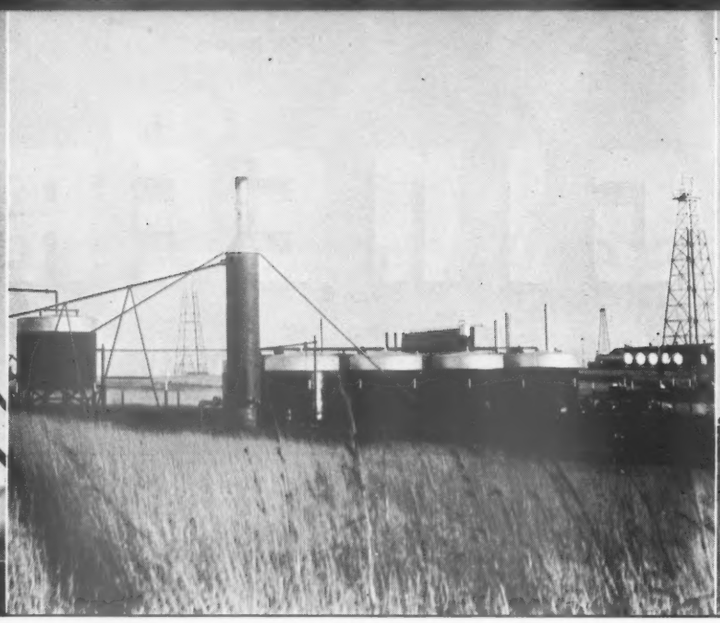
METALS PROGRESS—*By W. L. Nelson* ..... *Page 65*

QUESTIONS ON TECHNOLOGY—*By C. K. Francis, Ph. D.* ..... *Page 76*

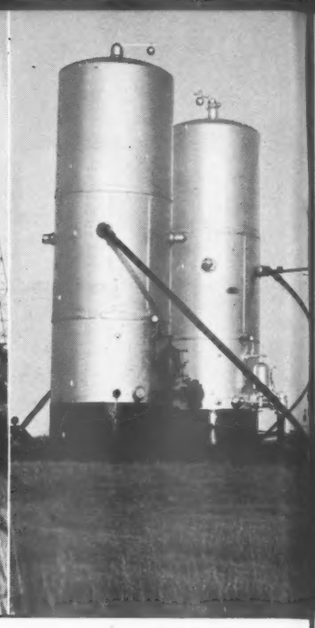
PROBLEMS FROM READERS—*By L. G. E. Bignell* ..... *Page 78*



Twin separators with automatic pressure reducers at each tank battery



Battery of eight 200-bbl. welded tanks, treating tank and automatic heater



Oil-gas separator, chemica treating tank, and four 50 feede bbl.

Unitization Conserves

By HARRY F. SIMONS

The Billings-Wilcox pool in Sections 16, 21, 22, and 28-23n-2w, Noble County, Oklahoma, is an example of the conservation of reservoir energy possible through cooperation of leaseholders and of the benefits to be derived from a continuous gathering and careful study of subsurface information. The inauguration of a recycling system on October 15, 1938, completes the production plan which now includes unit operation, gasoline extraction and pressure maintenance. Gas in excess of that used for the manufacturing of gasoline at the natural gasoline plant in Section 21-2w-23n, and lease operations is being returned to the production formation. It is estimated that the ultimate recovery will be increased by at least 40 per cent by the pressure maintenance and controlled production.

There are 64 wells in the field producing from the Wilcox sand from 4,200 to 4,300 feet, all but 4 of which are in the community block formed with Phillips Petroleum Co., Shell Petroleum Corp., Tide Water Associated Oil Co., and Continental Oil Co. unitizing their properties, with Phillips having charge of the production and Continental operating the natural gasoline and repressuring plant. The Champlin Refining Co. has one well in the NE NE NW of Section 28-23n-2w, and Lincoln-Rudco has three wells in the N half of the SE of Section 16-23n-2w which are not included in the unit.

The unit operates under the direction of a committee composed of one member from each of the interested companies. At each meeting a report containing all pertinent information on the field is submitted to the committee by the personnel in charge. This report includes reports on the progress of any new projects inaugurated since the last meeting. To aid in the study of subsurface problems an accurate peg model of the structure is available, as well as an accurately drawn laminated structure map which folds back at any well selected to reveal a log strip, casing record and completion information. The peg model shows total depth and casing point.

Deep Wilcox production was discovered on February 8, 1936, when the Phillips-Shell No. 1 F. M. McCaughtry in the NW NE NE of Section 21-23n-2w came in for better than 5,000 bbls. of oil daily from a depth of 4,258 feet. The discovery followed the completion on August 29, 1935, of the Phillips No. 1 T. P. O'Neil in the SE SE SE of Section 16-23n-2w as a Simpson producer from a total depth of 4,295 feet. The Wilcox was missing in this well.

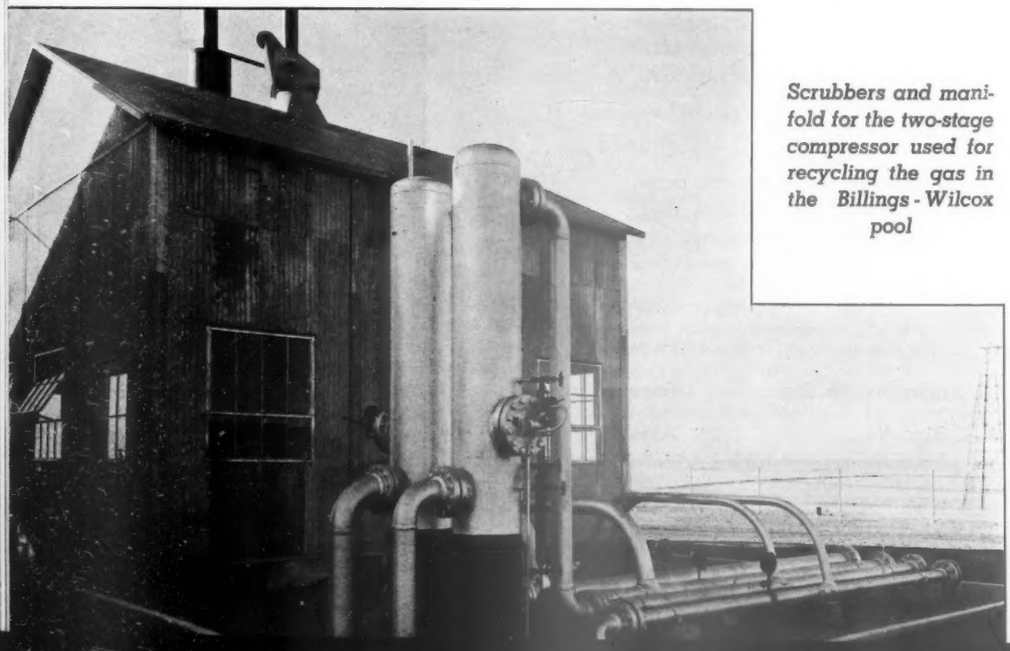
One Well Drilling

Development of the field was not rapid, the last completion being Phillips-Shell No. 2 Brumfield, in the SW SW NW of Section 22-23n-2w, completed in January of 1938. Three dry holes were drilled on the north, one on the west, and one on the south. There are several shallow dry holes to the east, drilled in 1918 during the development of the old Billings field when production was obtained from the Hoover at around 2,100 feet and from the Tonkawa at around 2,700 feet. Some of these old wells are still producing.

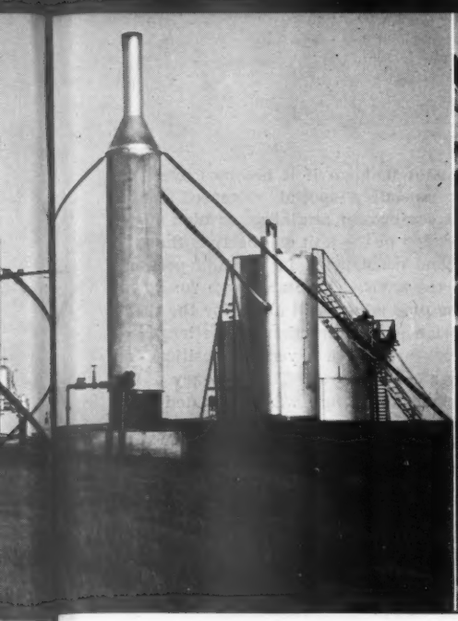
One well is being drilled at the present time, the Billings Unit No. 62 in the SE NE SE of Section 21-23n-2w. There are now 640 acres of proven productivity under the 64 wells. All members of the unit have made considerable effort to conserve the energy of the field since its discovery and as little gas as possible wasted as all of the wells except one were produced through tubing, with small chokes to reduce the gas-oil ratio. The remaining well was pumped as the gas volume was very low when the well was completed and efforts to rectify this condition disclosed that the gas-bearing portion of the sand was not present in that well.

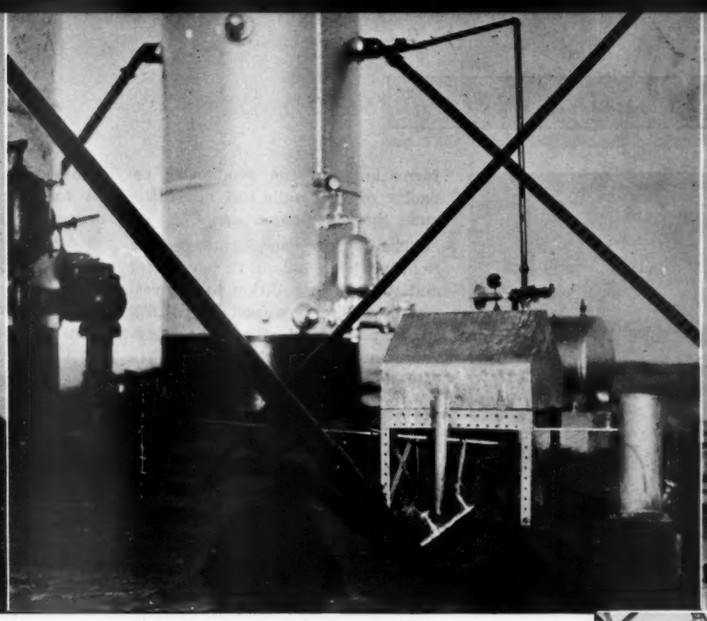
When the Unit Committee took over the operation of the pool, all of the interested companies turned in the information they had been gathering since the field's discovery. So completely was this data assembled that the present compilation appears as an engineering model of the information that should be gathered.

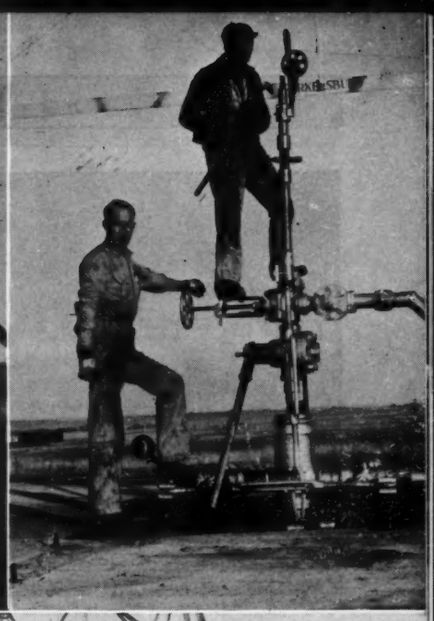
Since the discovery of the deep Wilcox pay, the field has produced 4,164,185 bbls. of pipe line



Scrubbers and manifold for the two-stage compressor used for recycling the gas in the Billings - Wilcox pool







feeder, automatic heater
bbl. bolted steel tanks

An automatically regulated chemical feeder on one of the separators in the Billings field

Pressure

oil for a per well average of 65,065 bbls. and a per cent average of 6,507 bbls. October shipments averaged 2,535 bbls. per well, per acre average of 254 bbls., and a total for the field of 165,929 bbls. Allowable for the field is based on the decline potential and as the bottom-hole pressure declines very little during a month's time there is little difference in the monthly allowables which are computed as 3 per cent of the potential. The Billings-Wilcox field was given Class B rating by the Oklahoma Corporation Commission.

Original bottom-hole pressure of the field averaged 1,664 pounds at 3,100 feet below sea level. Bottom-hole pressure on October 15, 1938, was 1,566.1 pounds per square inch taken at —3,100 feet, or a decrease of 97.9 pounds per square inch for the two years and nine months life of the field. This is a percentage decrease of only 5.8 per cent. Bottom-hole pressure on September 15, 1938, averaged 1,566.4 pounds per square inch, thus showing a decrease of only .019 per cent for the month. With such conservation of reservoir energy, production hazards and costs will undoubtedly be minimized during the life of the field.

Average bottom-hole pressure tests taken monthly at —3,100 feet.

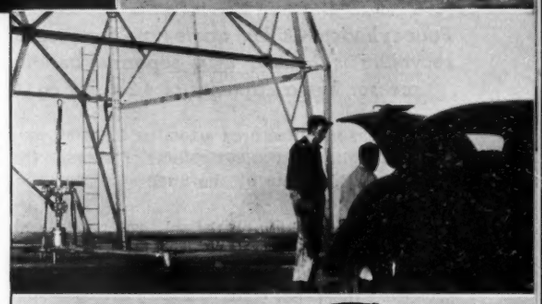
Date—	Lbs./sq. in.
3- 3-37	1,664
7- 1-37	1,602
10- 1-37	1,596.2
11- 1-37	1,582.4
12- 1-37	1,575.8
1- 1-38	1,575.5
2- 1-38	1,564.8
3- 1-38	1,564.5
4- 1-38	1,565.9
5- 1-38	1,566.3
6- 1-38	1,565.3
7- 1-38	1,567.1
8- 1-38	1,566.3
8-15-38	1,566.5
9-15-38	1,566.4
10-15-38	1,566.3
11-15-38	1,568.1

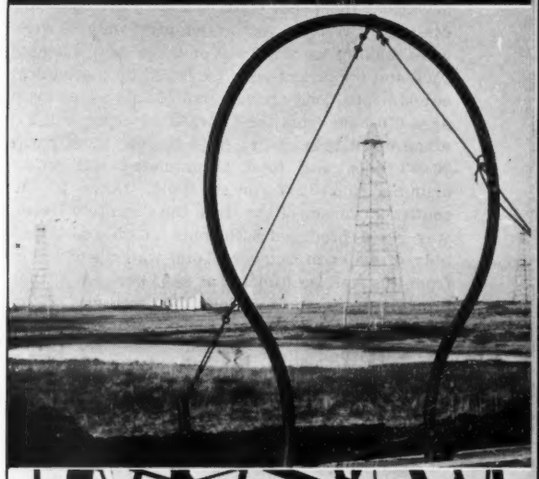
A glance at the table reveals that the pressure decline took place early in the life of the field when wells were being completed and others that had been completed and shown excessive gas-oil ratios and comparatively rapid pressure declines had not yet had the remedial work finished. January, 1938, was the last month during which there was a substantial bottom-hole pressure decline, dropping 9.7 to 1,564.8 pounds. During February there was a further decline of .3 pound to the lowest average monthly bottom-hole pressure during the life of the field, 1,564.5 pounds per square inch. Studies of the wells and arriving at the proper rate of flow for each well aided materially in the maintenance and increase of reservoir pressure. Decrease in bottom-hole pressure per 1,000,000 bbls. of pipe line oil has been 23.5 pounds per square inch. By use of pressure maintenance this figure will be reduced.

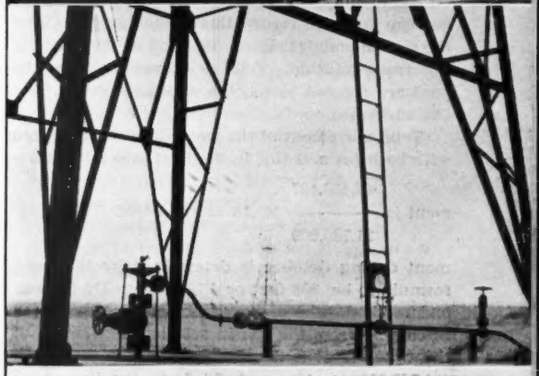
Check Reservoir Conditions

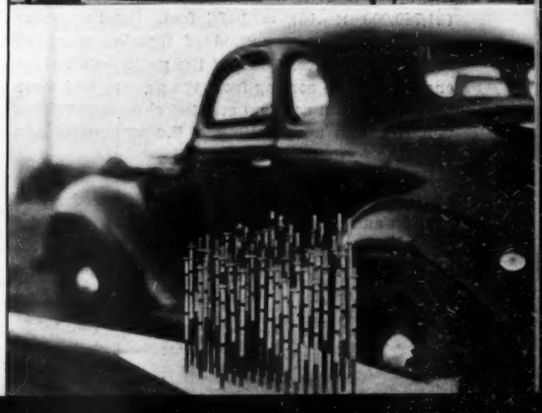
Reservoir conditions are checked monthly, including not only the bottom-hole pressure but the temperature at the depth the pressure test was taken, as well as the temperature in the sand. The gas-oil ratio for the field has been in the neighborhood of 700 cu. ft. of gas per barrel of oil. After the gasoline plant began operating in March, 1938, this gas was processed resulting in the manufacture of from 10,000 to 12,000 gallons of gasoline daily. An average of 2.20 gallons per 1,000 cu. ft. of wet gas delivered is the yield for the average of the wells in the field.

The gasoline is pumped through a 2-inch line to the Ponca City refinery of the Continental Oil Co. as soon as it is stabilized. Butane, another product of the plant, is sold to jobbers at the plant. During October, 322,686 gallons of gasoline were made and shipped from the plant and at the same time 4,570 gallons of butane were sold. The plant is flexible enough that if it is desirable and the market demand is sufficient, larger quantities of butane can be manufactured. Since the plant went into oper-

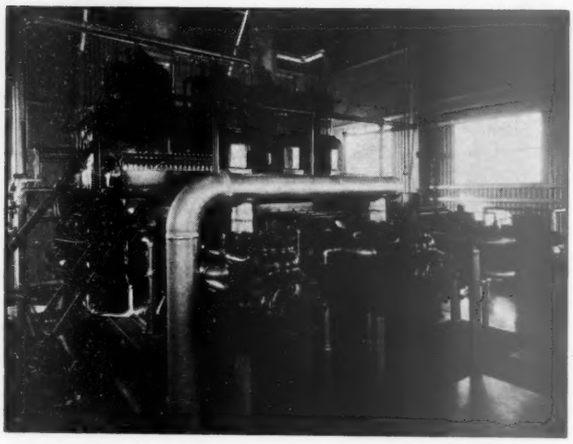








(Top, reading down) *Ready to remove the bomb after taking regular monthly bottom-hole pressure test.—Running bomb in well to get a test of the bottom-hole pressure. The reel is in back of the car.—Ox-bow loops allow for the expansion and contraction of pressure-maintenance lines.—One of the input wells in the pressure-maintenance system. Note that the gas is metered into the well.—Closeup of the peg model which is used frequently by the engineers and the operating committee of the Billings-Wilcox pool.*



Four-cylinder, 400-hp., angle-type compressor used for the recycling is housed in a separate building. The compressor has a capacity of 4,200,000 cu. ft. per day

ation, it has manufactured a total of 2,678,061 gallons of gasoline and 35,664 gallons of butane. Oil from the field is run by the Shell and Champlin pipe line systems.

Close check is kept on the salt water produced in the field, as well as the commercially valuable oil and gas. Twenty wells have produced salt water at various times, but eight of these have been successfully corrected, and on October 1 only 12 wells were making water. Four of these were plugged back and the others were corrected by mechanical adjustments. Daily production of salt water averaged 870 bbls. from the 12 wells, or a per well average of 73 bbls. daily; total for the month was 26,983 bbls. and total accumulated salt water amounts to 210,247 for the field. Down in the southwest corner of the field, the Champlin Gassoway No. 1 produced 5,240 bbls. of oil and 26,983 bbls. of water in October. Total water production from this well is estimated at 89.52 per cent of that brought to the surface since the discovery of the field, while it has produced 0.99 per cent of the total oil recovered.

Reducing all withdrawals, oil, water and gas, to cubic feet the October net withdrawal for the field is calculated to be, (*a*) 1,389,139 cu. ft. and (*b*) 1,198,650 cu. ft. The first quantity is calculated on the assumption that all of the gas is from the gas cap and will return there when injected, and the second amount allows for parts of the gas coming from solution. Total withdrawals from the pool are figured to be, (*a*) 43,453,437 cu. ft. and (*b*) 36,080,440 cu. ft.

Total movement of the water level is calculated with both (*a*) and (*b*). In the first case total movement is $\frac{43,453,437}{21,780,000} \times .16 = 12.46$ feet. The movement during October is determined by the same formula to be .398 feet or 4.78 inches. By the second method, where the excess gas is considered as coming from the gas in solution, movement of the water level is determined to be 36,080,400 ÷ (21,780,000 × .16) = 10.38 feet. October water movement by this method of figuring was .344 feet or 4.13 inches. Some of the gas is believed by engineers to be coming from the gas cap and some from the gas in solution and the close supervision will result in a reduction in the amount of gas from the former source.

Selection of wells for repressuring purposes was done only after lengthy study of all the production and pressure information. The peg model and laminated map came in for close scrutiny. No new wells were drilled for returning the gas to the formation and the productive capacity of the wells did not influence the decision.

The average gas-oil ratio for the field has been 732 cu. ft. per barrel and the gas in solution in the reservoir was determined to be 588 cu. ft. per barrel at present reservoir conditions. During October 34,719,000 cu. ft. was returned to the sand after the pressure plant started operating in the middle of that month. The input gas-oil ratio was 214 cu. ft. per barrel, making a net gas-oil ratio of only 518 cu. ft. per barrel, or 70 cu. ft. less per barrel than the amount of gas in solution with oil produced.

An indication of the amount of gas that these companies will be saving by returning to the sand is gained from a comparison of the disposition of the residue gas from the gasoline plant before the repressuring unit was installed and for the month during which the plant was put in operation.

	Total residue to field	Total residue to air	Total residue to plant fuel	Total residue to repressure
September	9,946,000	69,047,000	17,417,000	.....
October . .	5,995,000	30,187,000	18,898,000	34,719,000
November	.....	.....	20,965,000	63,186,000

In a typical month before the repressuring system started operating, 71.8 per cent of the residue gas from the gasoline plant could not be used and had to be blown into the air. During October when the pressure maintenance plant was only operated 15 days, the residue gas blown into the air was only 31.4 per cent of that produced. During November and subsequent months no gas will be wasted, all of that beyond plant and lease requirements being returned to the producing horizons.

Residue gas is taken from the top of the absorber after the gasoline has been removed and goes through an 8-inch line to the repressure unit which is located in a separate building from the gasoline plant compressors. The gas is picked up by the compressor at from 250 to 300 pounds and discharged at 500 pounds through a 6-inch line that takes it to the cooling tower and returns it to the high-pressure side of the compressor. It is discharged at a pressure of 1,450 pounds into the 3-inch header which carries the gas to the field repressuring system. Two-inch lines branch off from the 3-inch line to each of the input wells.

The compressor used is a four-cylinder 400-hp. angle type, having a capacity of 4,200,000 cu. ft. per day. It is equipped with Mercoid switches that automatically shut it down if it becomes overheated for any reason; a special overspeed switch prevents the compressor attaining too high speed.

An innovation of the unit engineers is the type expansion bend constructed in the high-pressure gas lines to the wells. These are large "ox-bows" bent into the pipe which will allow for the maximum expansion and contraction of the length of the line. They are set in a vertical position and protected by a concrete wall. The tendency of the expansion bends to vibrate was eliminated by a baffle type dampener placed in the discharge line and by guying with cable and turnbuckles; they were manufactured on the job by bending a joint of seamless 3-inch or 2-inch pipe around a boiler barrel.

Calculation of the pressure necessary to move the gas through the sand in the field was by the formula:

$$P_w = P_h\,(1 + 0.0000361\ LG)$$

$$1,579.5 = P_h\,(1 + 0.0000361 \times 4,200 \times .771)$$

$$P_h = \frac{1,579.5}{1 + .11968233} = 1,396.2 \text{ lbs. per sq. in. at well head}$$

to overcome bottom-hole pressure, where

L = 4,200 ft. depth to producing zone
G = .771 = sp. gr. of gas (air = 1.00)
P_w = pressure in producing zone
P_h = pressure at well head
0.0000361 = weight of column of air 1 sq. in. in cross section, 1 ft. high at 1 lb. per sq. in. absolute pressure at 60° F.

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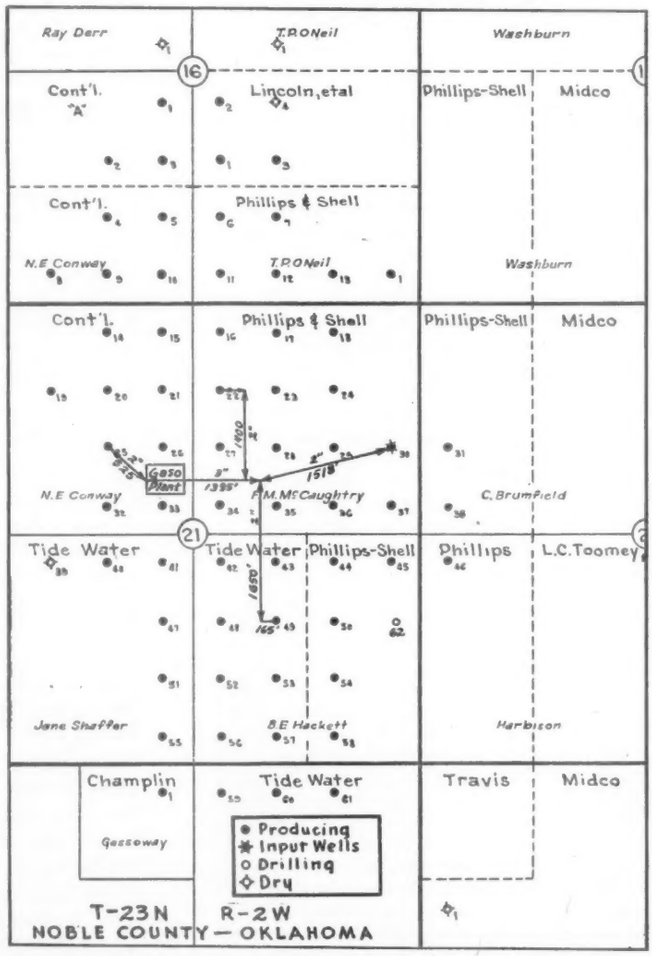


Map of the Billings-Wilcox field, in Township 23n, Range 2w, Noble County, Oklahoma, showing location of pressure-maintenance wells, producers, drilling wells, and dry holes

Technical Control Required in the Manufacture of Greases

By W. A. LUTZ, H. A. AMBROSE and W. A. GRUSE

Gulf Research & Development Co. — Mellon Institute of Industrial Research

Second half of paper presented before the Lubricating Grease Institute; in the first half, which appeared in the February 9 issue, the authors discussed basic conditions, structure of greases, and consistency. In this portion the authors discuss bleeding and oil separation, chemical stability, oxidation stability, specifications, and service data.

Separation of oil from grease is of considerable practical importance. In the first place, oil separation in a drum or can indicates to customers that the grease is not stable. Oil separation may occur in an unsuitable grease by centrifugal action of the bearing or by squeezing out of the fluid by pressure. Oil which separates and flows away from the bearing surfaces leaves a grease harder than the original, and, if this goes far enough, soap may start to separate. Soap in itself, particularly when it agglomerates and becomes hard, is not a good lubricant and increases bearing friction.

A number of unpublished methods are in use for studying oil separation. One of these involves placing a sample of the grease in a conical wire basket and holding the assembly at elevated temperatures for several days, noting the oil leakage. Several so-called "channel" tests are also in vogue, where the grease is channeled with a shaped instrument and allowed to stand at elevated temperatures. Oil separation is noted in the channel.

A better test method for measuring oil separation under moderate pressure was proposed by Herschel.[14] This apparatus has also been used by Farrington and Humphreys.[15] The apparatus involves a grease press in which a weighted plunger resting on a grease sample squeezes oil from the grease into blotting paper and filter paper discs. Oil separation is estimated from weight loss. Data of Farrington and Humphreys indicate good agreement between tests. It is shown that:

1. Oil loss is increased by pressure.
2. Oil loss is less for greases of high soap content.
3. Oil loss is less for oils of higher viscosity.
4. For greases of the same penetration (A.S.T.M. worked penetration) aluminum soap greases bleed least, calcium soap greases are intermediate, and sodium soap fiber greases lose the most oil.

The above generalizations, all of which seem reasonable, will no doubt be influenced by other factors such as glycerin content, nature of fatty oil used for saponification, presence of excess acid or alkali and nature of the oil base. It is known that certain greases may be improved as to mechanical stability by addition of extraneous materials.

The extent to which the consistency and the mechanical stability of a grease are influenced by shearing, of the kind and amount that it would receive in service, while known qualitatively, are deserving of careful quantitative study and make up one of the next big problems in the field.

The requirement that a grease shall remain unchanged and fit for service over periods of time up to several years and over ranges of temperature extending from —40° to +400° F. with exposure to air, to humidity or actual moisture, and to the well-known oxidation accelerating effects of metals such as copper or bronze, seems a little unreasonable to a chemist. The petroleum hydrocarbons present are quite stable, but they do change, while the fatty oils and fatty acids which make up the soaps, are several steps lower on the scale of stability.

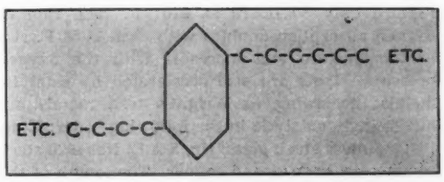
Chemical stability may be influenced by:

1. The environment of a grease, including both the conditions and the substances with which it comes into contact, and
2. The deleterious constituents in its own make-up.

Among the outside substances with which grease comes into contact, the most significant and most universal are air and water. The engineering public has not yet recognized that petroleum lubricants are, after all, fairly easy to oxidize under service conditions. The assumption of complete stability arose in the days of milder conditions, but it is not correct in these days of high loads and high temperatures. While various hydrocarbons and their mixtures differ by hundreds and even thousands of per cent in the speed, extent, and direction of oxidation, with resulting great inequalities in value and serviceability, the fact remains that eventually they will oxidize. When an engineer buys a set of porcelain dishes for his home or an enamel-lined kettle for his plant, he knows that eventually it will break and need replacement. A similar realization about lubricants and oxidation would save much irritation and perhaps avoid some failures.

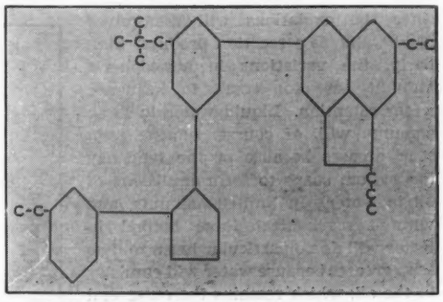
The fatty acids, the soaps, the petroleum hydrocarbons, and the glycerol in greases are all oxidizable. In any case, for oxidation to proceed rapidly, elevated temperature and intimate contact with air are required. The conditions of use for most greases provide both, since high-speed agitation and high temperature are customary.

The hydrocarbons in the oils used for greases will vary from very paraffinic types to what are known as the polynaphthenic. The former may have one or two cycles with one or two long side-chains and possibly one or two short ones.



It is probably characteristic of these compounds, on oxidation, to break off straight-chain fatty acids somewhere near the ring. If the chains are short enough, the acids can be of fairly low molecular weight, partially water-soluble and corrosive. If the chains are long, the acids set free can be reoxidized to smaller ones of the type just mentioned.

The polynaphthenic hydrocarbons are pictured as made up of a larger number of rings, both aromatic and naphthenic in types, closely joined together and carrying relatively shorter side chains.

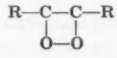


These, on oxidation, show less tendency to release low molecular weight acids and more tendency to join molecule with molecule, forming acids of greater molecular size, which becomes progressively more insoluble as they grow. The resulting products are resinous and asphaltic substances, varnishes and sludges. Usually when formed, these complexes are soft, sticky semifluids; and they are rather unstable thermally and break up easily with release of water and carbon dioxide to form harder and more insoluble solids.

The acids and the solids produced, as above, have each a harmful function. The acids can be pictured as disturbing the rather delicate balance in the colloidal system established, breaking down some part of the gel structure, thus producing syneresis or bleeding. This process carried on, leads ultimately to segregation of the soaps; these latter can be hydrolyzed, setting free some of the fatty acids; ultimately the grease will go to pieces.

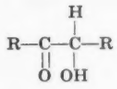
The production of insoluble resins and asphaltenes can be troublesome in another direction. They are always accompanied by some acidic material, so that acidic deterioration will occur. Their insoluble character will produce inhomogeneity of the grease, lumpy and granular structure and where conditions are right the coating of the metal with varnishes, which will interfere with lubrication and operation.

The oxidation of fatty acids and soaps is almost as dark a field as that of petroleum oils. While many greases are now made from fatty acids rather than fatty oils, even the so-called stearic acids contain an appreciable content of oleic acid, and it is possible that traces of still more unsaturated compounds are present. By analogy with studies on drying oils, it is likely that peroxides at double bonds



represent the first attack. These might rearrange

into keto-hydroxy compounds, or react with water under cleavage conditions to yield aldehydes and keytones;



in any case, the course of reaction will lead to thermally unstable unsaturated hydroxy acids, analogous to those in gasoline gum. Like the latter, they will decompose easily to relatively insoluble varnish-like complexes. A simultaneous oxidation in another direction (particularly with saturated acids) will break up, from the fatty acid chains, smaller acidic residues yielding low molecular weight acids, which can be, as stated, injurious to the grease emulsion and corrosive to metals. This oxidation usually occurs at the beta carbon from the COOH, yielding acetic acid.[16]

The influence of water, present as atmospheric humidity, will probably be of small importance with regard to the chemical reactions sketched above. While water is an accelerant for such oxidations, the presence or absence of extraneous water usually makes little difference, since the oxidations will themselves yield water as a reaction product. Similarly, the variations in atmospheric humidity are too small to influence water retention. Liquid water in large amounts will, of course, remove soda soap greases because of the tendency for sodium soaps to form emulsions of oil in water. In limited amounts, and without mechanical force behind it, water will do no particular harm to lime soap greases because water will emulsify in the oil, which remains the outer and lubricating phase.

The other common outside material with which greases comes into contact are metals. Iron, steel, and copper in bronze and brass are most used. The bad effects of copper are well known. Recently it has been recoegnized that iron soaps are also marked accelerants of oxidation.[17]

The influence of small amounts of constituents other than the basic four-soap, oil, glycerol and water—such as chlorine and sulfur compounds, excess amounts of free alkali or free fatty acids, raises a large number of complex questions which go beyond the scope of this paper. An example of the simpler points coming under this head would be the inclusion of improperly chosen chlorine compounds which could hydrolyze to release hydrogen chloride. The effect of this acid on both grease structure and metal surfaces requires no discussion.

Tests for Oxidation Stability

It is well-known that greases oxidize in storage and in service. The storage oxidation is usually of no consequence except in bearings packed with grease and allowed to stand idle for a number of months without use. In bearings operated at immoderate temperatures, or in bearings operated for long periods without relubrication, oxidation may proceed to a point where oil leakage will occur or hard soap or gums separating out will cause high friction and high starting torque. As shown by McConville[18] oxidation of a grease usually raises its freezing point and raises the starting torque of the bearing in which it is contained. Although slight oxidation may have no effect at operating temperatures, in cold weather the grease may be so hard as to prevent starting.

Oxidation of grease in storage is of particular importance in the case of ball bearings which are either packed and "sealed for life" or are packed and placed in motors which remain in storage or idle for some period before use. Serious oxidation causing either "freezing" or roughness of the bearing may occur in less than a year. It has been found possible by various tests to predict the storage and service stabilities of lubricating greases.[18,19]

McConville packed ball bearings with grease and oxidized these at elevated temperature, following which the starting torque was measured and compared with that of the original grease. It was found that grease oxidation was accelerated both by moisture and by light. When oxidized greases become quite acid and hard, gummy products which increased starting torque were formed. Results obtained by this method qualitatively checked those obtained by the method of Wright and Lutz.[20] Both methods are capable of selecting greases which will be stable in bearings packed and stored for long periods.

The well-known Wright-Lutz method[20] involves the rate of oxygen absorption by thin layers of grease placed in glass or metal cups in a steel bomb at elevated temperature and in an atmosphere of oxygen under pressure. The rate of oxygen absorption is measured by decrease in gauge pressure. Suitable temperatures are between 175° and 210° F. Greases are rated in the same order regardless of temperature and the higher temperature, 210° F., is favored because results are obtained much more rapidly. A test which is completed in 200 hours at 175° F. would require only 50 hours at 210° F. The rate of oxygen absorption doubles with each 17.5° F. rise in temperature and increases with the oxygen pressure. Tests are also accelerated by catalytic metals; according to Wright's test, metals are increasingly catalytic in the following order: Zinc, 18-8 stainless steel, glass, tin, S.A.E. No. 1020 steel, commercial bronze, and copper. The length of the tests may be reduced considerably by use of copper which may cut the induction period to one-tenth its value when the grease is in contact with glass alone. It must not be forgotten, however, that the presence of copper may change the course of the reaction. This is demonstrated by Clark[21] for transformer oils; the relation of several of the factors in the reaction to one another is basically altered by the copper.

Confirming the results of McConville, Wright and Lutz found that although moisture accelerates the rate of oxidation of grease, it does not appear to be a major factor.

Rate of Grease Oxidation

When normal lubricating greases oxidize, the rate of oxygen absorption is usually low at the start and practically no oxygen may be absorbed for some hours, following which the rate increases sharply and the pressure drop is very rapid. The time at which the pressure drop starts to increase rapidly is often termed the "induction period." By improving the quality of products used in manufacture, the induction period in an accelerated oxidation test may be extended. Some antioxidants increase the induction period, while others "block out" the induction period and oxidation proceeds at a nearly constant but low rate. It is generally considered that this latter type of oxidation is preferable in order that no sudden change in grease structure may occur; under these circumstances deterioration will proceed at a gradual but low rate.

These oxidation tests are extremely important for evaluating greases for special applications such as sealed ball bearings, ball bearings packed for storage or antifriction bearings operated at relatively high temperatures. Neither this test nor any other common method evaluates changes in consistency which may be considered undesirable. In use, some greases change from a buttery, smooth consistency normally desired for use in ball bearings to a fibrous type of grease which is not favored; apparently acids developed by oxidation serve to precipitate the soap and destroy the gel. No single test is available for evaluating all desirable properties. In general, each specific desirable property must be investigated independently before semi-service or actual service tests are made.

One general thought can be drawn from the facts about oxidation stability and oxidation tests. Since greases do oxidize to yield chiefly trouble, it is unreasonable to expect them to remain useful over long periods in systems where change is possible. Five hundred hours or a thousand hours in a system may be too long. Likewise too great an insistence on low grease consumption may be unwise; moderately frequent changes or additions may represent cheap insurance against interruption of service.

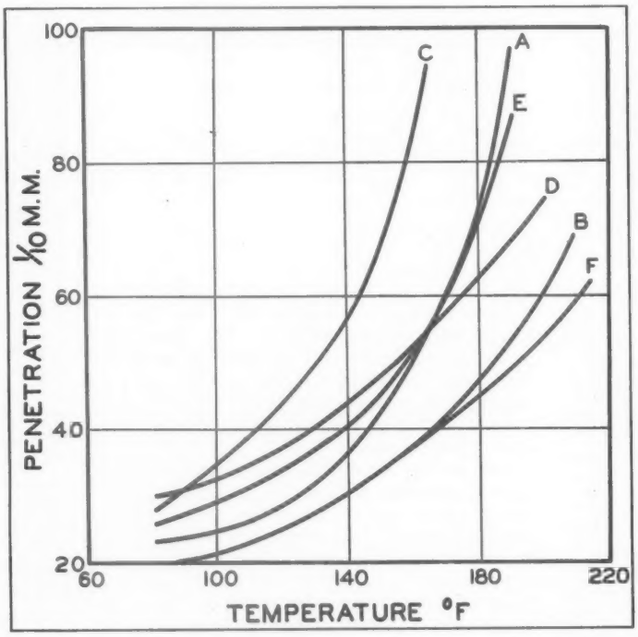


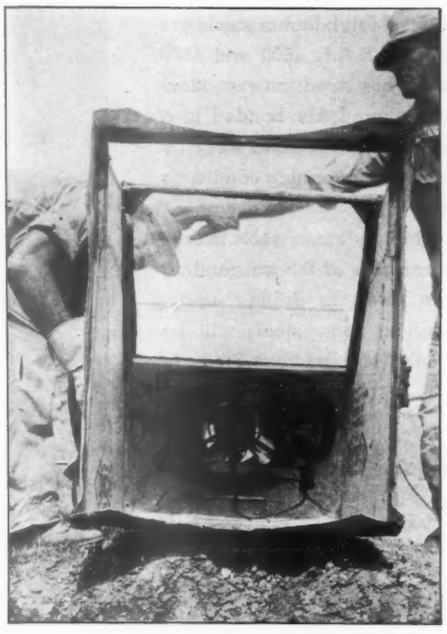
Fig. 4—Penetration vs. temperature for several soda-base greases of approximately the same soap content

Specifications and Service

The art of purchasing wisely all the supplies for a modern manufacturing operation has for some years followed in its development the line of writing more and narrower specifications. It is quite usual nowadays for a purchaser to specify, for a grease he desires, the kind and amount of soap, the base, viscosity and amount of oil, the color, odor and appearance, the consistency as indicated by penetration, the proportion of free acid and moisture and so on. In specifying so closely the make-up of the product, the purchaser assumes a large degree of responsibility for the quality of service which it will render. He rejects the manufacturer's experience and reduces him to the category of a purveyor of standardized products. But we know only too well that greases

(Continued on Page 75)

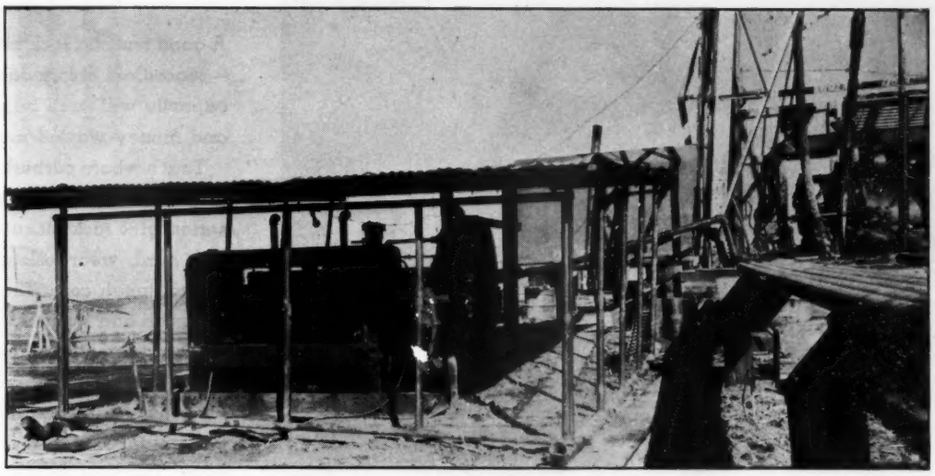
OPERATING IDEAS



Welder Uses Electric Fan to Remove Poisonous Fumes

A small d.c. electric fan, of a size familiar in houses and offices, is placed inside a funnel to furnish a forced draft which removes the poisonous fumes present during copper bonding operations carried on in connection with the cathodic protection of pipe lines.

The fan seen in the illustration is installed in a funnel, photographed while resting on the ground in a horizontal position; the glass window, through which the welder watches his work, can be seen above the fan; above the window is seen the opening through which the welder can reach his work. When used the funnel stands upright over the pipe, in a vertical position. Power for operating the fan is furnished by an electric generator of a type used for domestic purposes; it is mounted on the front of the horse-drawn arc welder machine.



Portable Shelter for Mud Pump Unit

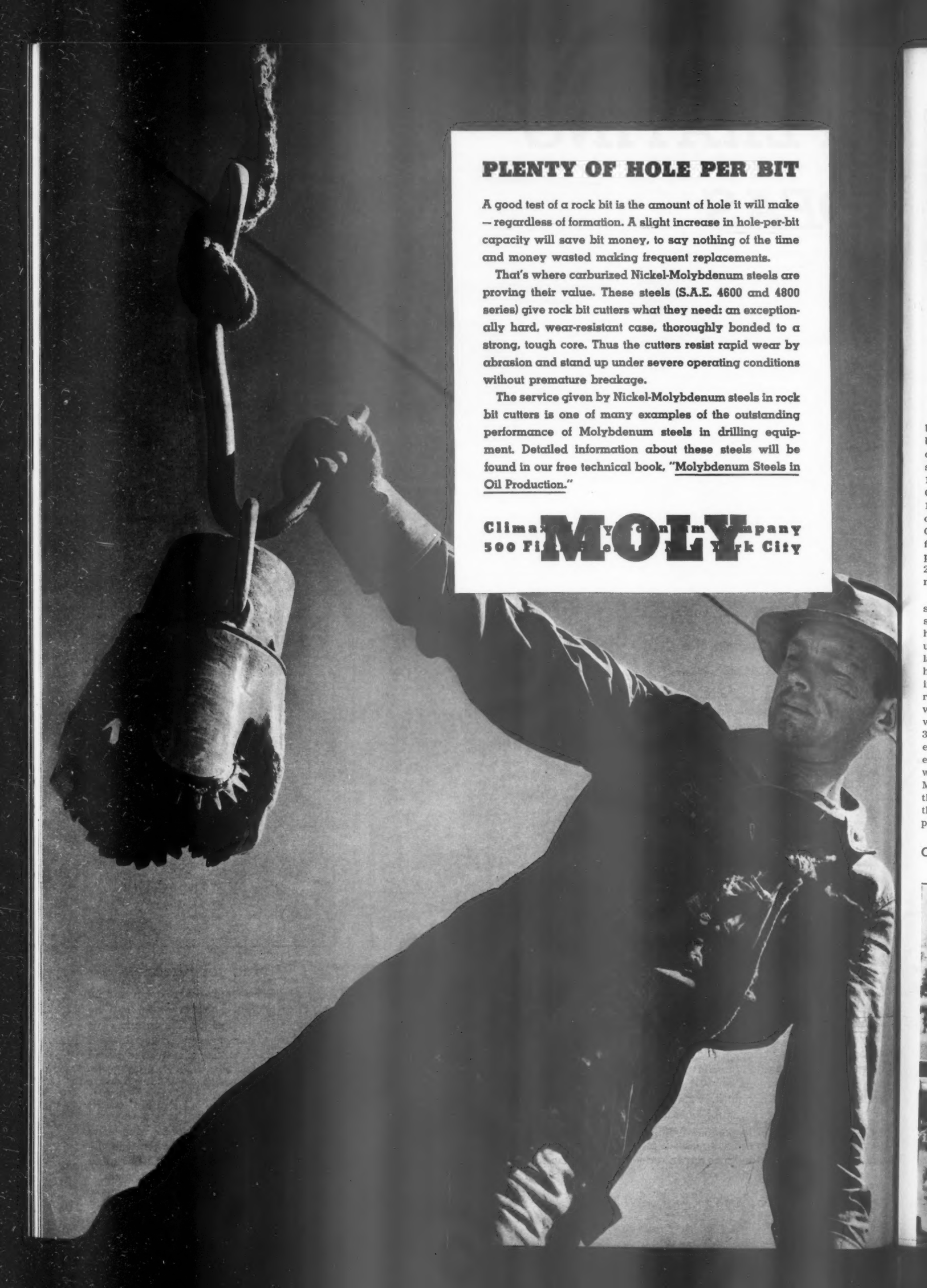
At one rig drilling in West Central Texas the operator has erected the portable shed shown here to protect the engine and slush pump. This shelter is easily portable; the shed may be dragged intact to a nearby location, or, if the move is of any distance, it may be knocked down and hauled or skidded. The end section is fastened to the remainder of the uprights by only four bolts, which, when removed, allow the two sides to fold in to make a flat, easily transportable piece of equipment. Old 4-inch pipe is used for the foundations for the uprights when on location; while being transported the foundations serve as skids.

Proportionate Chemical Feed

In the St. Louis-Oklahoma oil field one company has installed a chemical proportioning pump which operates on the flow line to the stock tanks. As the oil passes through the connections it operates a working barrel similar to the ball and seat type used on regular pumping barrels and this creates an up and down motion that works a small pump injecting the chemicals in the proper proportions. If the well heads up it increases the speed of the pump and puts more chemical into the line. A relief valve safeguards the line when particles clog the pump.

Mud Jet Rack

It is frequently desirable on rotary rigs to be able to get mud of a certain weight from the reserve pit into the circulating pit. This means that the jet must be adjustable or if a pump is used, the suction must be raised or lowered. Before any mud is put in the reserve pit, the crew generally builds a suction rack with a piece of 4-inch pipe across the top. A rope tied to the jet and wrapped around the pipe like a windlass, is used to hold the jet at the position where the desired weight of mud is located, thus providing convenient means for swing-pipe control.



PLENTY OF HOLE PER BIT

A good test of a rock bit is the amount of hole it will make — regardless of formation. A slight increase in hole-per-bit capacity will save bit money, to say nothing of the time and money wasted making frequent replacements.

That's where carburized Nickel-Molybdenum steels are proving their value. These steels (S.A.E. 4600 and 4800 series) give rock bit cutters what they need: an exceptionally hard, wear-resistant case, thoroughly bonded to a strong, tough core. Thus the cutters resist rapid wear by abrasion and stand up under severe operating conditions without premature breakage.

The service given by Nickel-Molybdenum steels in rock bit cutters is one of many examples of the outstanding performance of Molybdenum steels in drilling equipment. Detailed information about these steels will be found in our free technical book, "Molybdenum Steels in Oil Production."

Clima[illegible] Company
500 Fi[illegible] York City

MOLY

CONTRACTOR

Designs Own Rigs

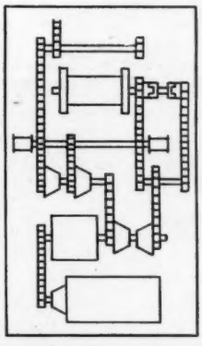
By Harry F. Simons

Millions of feet of hole have been drilled by contractors with purchased rigs, but not very much footage has been made by rigs designed and constructed by the contractors themselves. Since entering the contracting business in 1927, Roy Guffey, of the Jones-Shelburne Drilling Co., has drilled and supervised the drilling of over 1,000,000 feet of hole all of which was dug by mechanical rotary rigs he designed and built. Mr. Guffey has drilled 77 wells for a total of 276,318 feet with the last rig he designed. A string of drill pipe which has drilled 78 wells for a total of 280,318 feet is being used on the rig which is now at work near Fittstown, Okla.

Together with John Bunn, Mr. Guffey constructed his first mechanical rig in 1927 using a small internal combustion engine to drive the hoist and pump. This rig was designed for the use of three-quarters inch drill pipe but they later enlarged it for the use of 1½-inch pipe. It had a capacity of 700 feet and was used for drilling prospect and shallow producing holes. The rig was enlarged and 2-inch drill pipe was used with which a depth of 2,800 feet could be reached; with 2½-inch drill pipe they were able to drill to 3,500 and 3,600 feet. Mr. Guffey and Mr. Bunn enlarged their operations and built more rigs, each of which contained improvements which were shown to be desirable by actual experience. Mr. Guffey was also becoming acquainted with the personality factor and was impressed with the necessity of making his rig as "fool-proof" as possible.

Mr. Guffey was later with the Orbit Oil Corp., leaving it to join Jones-Shelburne in 1934. With the experience gained from designing, building, and operation of six rigs he decided to build one for drilling to 4,500 feet which could operate profitably at the prevailing contract price. The rig was ready for service early in April, 1935, and has been in operation in Texas and Oklahoma since then.

The rotary rig designed by Mr. Guffey consisted of three truck loads when completed. The hoist and engine comprised one unit, the pump and engine a second unit, while the crown and traveling blocks, swivel, rotary, and derrick equipment made up the third load. Weight of the heaviest unit, the engine and hoist with drilling line, is less than 25,000 pounds. By separating the pump and hoist drives, the pump can be set in any convenient position and the location of the pits make very little difference.



Simplified sketch of hookup used on hoist

In 31 days' time this rig set surface pipe, drilled the hole, and ran and cemented the casing on six wells all approximately 3,600 feet deep in the East Texas field. Seven hours after the derrick was turned over to drilling crews was the average time of rigging up and setting the surface pipe. On one occasion the plug hit bottom on a casing cementing job at 10 a.m. on Friday morning, and on Saturday at 11 a.m. the surface pipe was cemented on the next job 19 miles away. On another occasion 10 hours were required to tear down the rig, move it to the next location and set surface pipe. The shallowest field in which the rig has operated is the 2,100-foot Tussey, Oklahoma, pool, while the deepest is the 4,385-foot Talco, Texas, field.

(Upper) Driller's side of hoist showing operating levers. (Lower left) Side of hoist showing the automatic cathead

The use of individual motors to drive the pump and hoist required the designing of a special hoisting arrangement if it was to meet the requirements. Mr. Guffey designed the hoist with a full understanding of the following demands which would be placed on it.

For economical reasons it had to be designed so that it would not require an excessive large prime mover as most of the operating time is consumed when only the rotary table is turning; for the same reason the rig was designed to have no unnecessary shafts and chains turning while the rig was in operation. The hoist must have the power to pull 4,500 feet of 4½-inch drill pipe and still have a reserve power available in case it becomes necessary to work the bit through a tight formation; speed while running pipe into the hole was also essential.

A minimum of shock under starting loads was very desirable and this has some influence on the "human element" factor which Mr. Guffey had studied. He had learned that drillers were apt to mistreat a rig that was hard to handle and that some drillers are subjected to day-dreaming when operating a rig, with some damage resulting to the hoist as a result of inattention. Durability, dependability, and safety were also necessary.

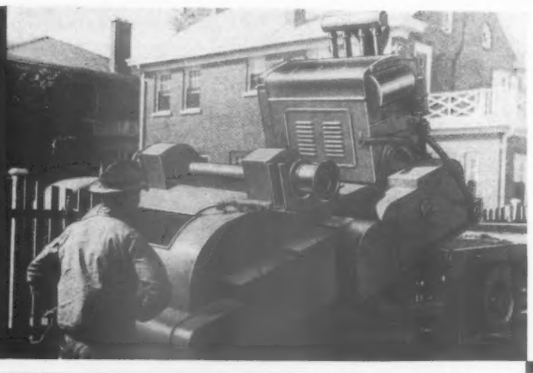
The hoist as manufactured contains the following main units: An internal combustion engine with clutch, tail-shaft and sprocket which delivers the power to the transmission input shaft. The transmission is equipped with a clutch and its power output shaft is connected to extended transmission shaft by a flexible sprocket coupling. The extended transmission shaft is equipped with clutches and sprockets for driving the cathead and rotary line shaft and the hoist line shaft. The cathead and rotary line shaft includes clutches for operating the cathead shaft and the rotary countershaft which drives the ro-

(Continued on Page 58)

Coming out of the hole with 6,500 feet of 3-inch drill pipe on whipstocking job at Sixteenth and Lindsay Streets, Oklahoma City

AMAZING RECORD MADE BY NEW PORTABLE RIG !

Easy TO MOVE!



This candid camera shot shows how easy this rig is to move. The drawworks is moved intact . . . nothing to dismantle . . . nothing to assemble . . . every part remains intact. The minute the Guffey "45" is unloaded on the derrick floor it is ready to operate. On ordinary rigging up, eight men can be drilling the surface pipe hole in eight hours . . . and that includes setting the slush pump.

Easy TO OPERATE!

The Guffey "45" requires no more effort to handle than an automobile. Easy . . . simple . . . safe! Every control on the drawworks operates with feather touch ease . . . no undue "straining or tugging". The driller stands in a natural position as shown at the left. One operation to perform with one hand, one with the other . . . and one with either his right or left foot.

Ideal FOR SLIM-HOLE DRILLING!

Due to its compactness and comparatively light weight, the Guffey "45" is ideally suited for "slim hole" drilling to depths 50% to 75% deeper than for regular drilling. Since this rig is completely unitized, tearing down and rigging up costs are held to a minimum. We say, without hesitation, that no rig of its capacity is more portable than the Guffey "45" . . . a very important factor in "slim hole" drilling.

Guffey "45"

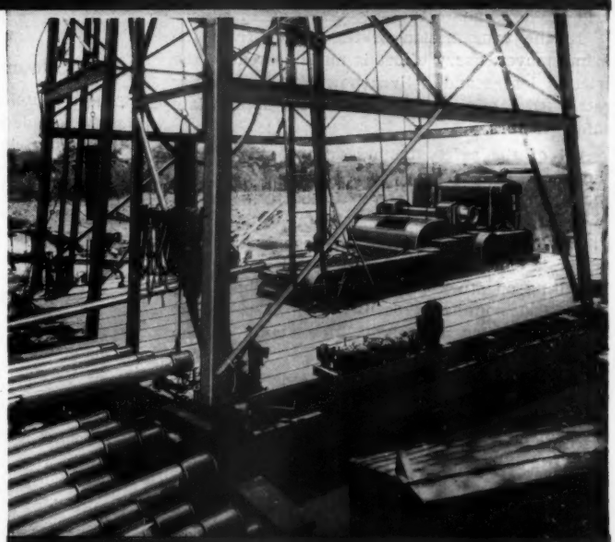
Drills 73 Wells in 415½ Drilling Days . . . or 262,115½ Ft. of Hole in 685 Payroll Days!

WE BELIEVE NO OTHER RIG HAS A RECORD LIKE THIS!

THINK OF IT! *Seventy-three wells drilled in 415½ drilling days! 262,115½ feet of hole made in 685 payroll days!* With a total repair and replacement cost of only $271.00! Has anyone matched this record?

Listen to this! The Guffey "45" is so finely constructed throughout . . . so expertly designed to give maximum efficiency with minimum effort . . . that after drilling 73 wells, this same rig is in practically as good condition today as it was when it left the factory.

The Guffey "45" has been able to make such an amazing drilling record because it has had so many practical, money-saving features deliberately engineered into it. You can't beat the Guffey "45" for *all-around economy.* That is why we urge you, before you buy any portable rig, to investigate the Guffey "45". Write today for complete details and prices.



Manufactured by

JONES-SHELBURNE, INC.
Oklahoma City, Oklahoma

Distributed by . . .

- THE BOVAIRD SUPPLY CO.
- JARECKI MANUFACTURING CO.
- LUCEY PRODUCTS CORPORATION

At all Stores

Guffey "45"
LESS SHUTDOWN TIME ON WELLS . . . . . AND BETWEEN WELLS!

At work on the W. H. Hammond lease in the K.M.A. field, Texas. The mud pump is at the right, set independent of the hoist and its engine

tary sprocket. The rotary countershaft has two sprockets, one for driving the rotary when it is in its normal position and the other for driving the rotary when drilling the rathole; it is enclosed in the drawworks with a sliding door concealing the rathole sprocket when it is not being used. The automatic cathead on the offside of the rig has unusual simplicity and effectiveness; it was designed by Mr. Guffey.

The hoist was powered with a 150-hp. Waukesha engine in which gasoline was used for fuel. The engine received careful attention from the drilling crew but its unusual performance has been in part due to no sudden over-loads being placed on it. Every load is started by a friction clutch and the transmission output shaft turns at a minimum of 225 r.p.m. when the motor is running at full speed. This prevents the load from being imparted directly to the engine as the momentum of the shafting and chains absorbs much of the shock. At the end of 77 wells, 276,218 feet of hole, the engine had run enough to propel a truck approximately 784,000 miles under normal conditions.

A Cotta, three-speed forward, single reverse transmission was used for obtaining the range of speed and power desired. With two speeds on the drum due to a high and a low clutch, six rates of drive are available on the hoist and three gears on the rotary table. Gear ratios used are 1 to 1, 1 to 2, and 1 to 4.

In the transmission of the power from the prime mover, every effort is made to reduce the friction losses and deliver power at the proper rate with a minimum loss and with appropriate safety factors.

All of the safety factors are computed with the lowest gears possible; the lowest factor is on the drum shaft low chain with the transmission in its lowest gear and the motor at full throttle. This is a very special case, as the only time the driller is called on to use this speed is when he is pulling on stuck pipe or fishing. A hook-load of 225,000 pounds is easily obtained with the hoist in low-low and eight lines strung on the blocks.

Twin disc clutches of the proper size for withstanding the tasks delegated to them are used throughout the rig. Those used for engaging the rotary, cathead and drum drives all have their spiders mounted on Timken roller bearings as the shaft must turn inside of them when they are not in operation. This arrangement was installed to prevent chain wear and the long life of the chains is evidence that this feature is commendable. Diamond chain was used throughout the rig. Only the rotary and high chains have been replaced, the other drives are using the chains installed originally.

The hoist has many features which make it easy to operate. A friction clutch is in the proper place for the starting of each load and the clutches and control rods are installed for easy movement. An innovation on the original rig was the multiple-jawed clutch on the drum shaft where a positive engagement is required. On the original rig these clutches had six faces but on the newer hoists a 24-point clutch is used on the low sprocket and a 36-point clutch is used on the high sprocket.

Rounded Points on Clutch

These clutches are designed with the points slightly rounded to prevent the driller from mishandling the rig and engaging them at too high a speed; if he does try to engage them when either the drum or sprocket is turning too fast the clutch faces simply slide across each other. The drum and sprocket must turn only 10 degrees for the high and 15 degrees for the low clutch to engage; enough rotation for engagement can often be gained by simply "bouncing" the brake handle.

Engagement of the clutches is always positive as the teeth are built with a 3-degree drag. While the low clutch has the off-side of the teeth tapered so the clutch will disengage as soon as the sprocket reverses, the high clutch has a taper to within five-fourteenths inch of the depth of the teeth, the remaining section being square. This provides ample means for reverse drive on the drum.

An automatic cathead of simple and rugged design is used with the rig, the heavy clutch from the line shaft to the cathead shaft serving as the operating medium. A heavy spring pin goes through a special key way between the shaft and cathead and the jerk line is attached to it when the driller is ready to come out of the hole; a hole drilled through the outer rim is used for attaching a rope which runs through a snatch block in the derrick and has an enclosed counterweight on the other end. When the driller engages the clutch the cathead line shaft turns and the jerk line is wound around the space provided for it on the shaft while the retrieving rope is wound around the cathead; when the clutch is released the counterweight on the retrieving rope reverses the line shaft and unspools the jerk line.

Controls for the hoist are simple and conveniently placed. The operation of the combination clutch and throttle and its position in relation to the brake handle are designed to take as much strain as possible from the driller. A gear shift for engaging the three-speed transmission, rotary clutch lever and cathead clutch lever are immediately in front of the driller and are easily operated; the high and low drum clutches are engaged by foot pedals.

The driller has a wide range of speeds at his disposal and little effort is required to shift the transmission gears. The accompanying table gives the speeds and pulling powers when using the different gears.

Many features installed for other purposes help in making the rig as safe as possible for the men but in addition it is completely enclosed and all greasing is done from centrally located connections on the exterior of the chain guards; this makes it unnecessary for a workman to get close to a source of danger. An enviable safety record has been made by Jones-Shelburne crews in that no man was injured on the rig while drilling 77 wells.

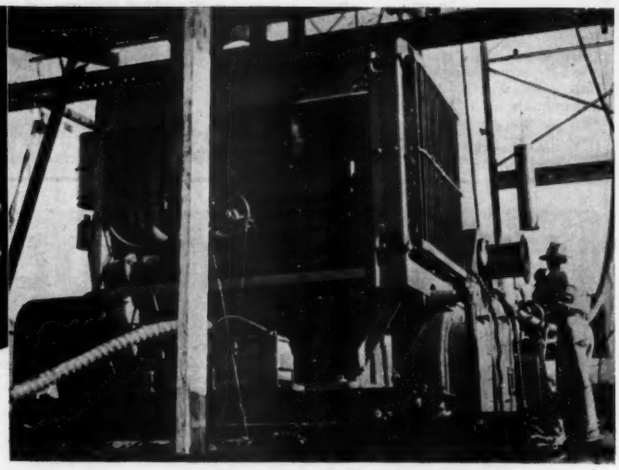
The drum shaft on the rig is made from Rychrome steel and is 5½ inches in diameter; driving shafts in the hoist are made from 3 7/16-inch Nichrome steel. All sprockets are precision made from heavy, wear-resisting alloys. Use of small shafting is possible because of the large number of bearings used, no torque being applied to the shafts at any appreciable distance from a bearing.

For an auxiliary engine, in case the hoist motor should fail, a Ford V-8 equipped with a transmission and sprocket is mounted on a skid. A sprocket for attaching it to the drawworks is built on the extended transmission shaft, the drive

(Continued on Page 64)

Tool joints and drill pipe used for drilling 280,000 feet of hole. At present it is being used on a well in the Fitts field, Oklahoma

JONES-SHELBURNE RIG No. 1 DRILLS 77 WELLS TOTALING 276,219 FEET



POWERED WITH A

WAUKESHA GAS ENGINE

AT AN EXPENSE OF LESS THAN $50 FOR REPAIR PARTS

Powered with one 150-hp. Waukesha Oil Field Engine burning natural gas —the Jones and Shelburne first portable rotary drilling rig has just about broken all existing records, except for depth.

In 31 days it dug five 3,600-ft. wells. It has been torn down from one well... moved 19 miles... rigged up and surface pipe set—all in 25 hours. Since it started in March, 1935, its total is 77 wells and 276,219 ft.

"During the entire time this engine was in service we did not grind the valves; tighten connecting rods; or make any machinery repairs to the engine whatever," says Sam Shelburne. "We did not overhaul the engine until after we had drilled 63 wells... total expense for repair parts on this engine was less than $50."

Ten years successful performance in the oil fields have proved the basic design of this WOK Waukesha Engine. Specially developed structural features assure exceptionally economical maintenance. Its dependability in long, continuous heavy-duty service is unquestioned. *Write for Bulletin 866.*

JONES-SHELBURNE, INC.
OIL PRODUCERS AND DRILLING CONTRACTORS
MANUFACTURERS OF HIGH SPEED ROTARY DRILLING MACHINES
FRED JONES
SAM SHELBURNE
OKLAHOMA CITY, OKLAHOMA

January 24, 1939

Waukesha Motor Company
Waukesha, Wisconsin

Gentlemen:

In March, 1935, we built our first portable drilling rig, which was equipped with one WOK 150 HP Waukesha motor.

To this date, we have drilled seventy-seven (77) wells with this rig, for a total depth of 276,219 feet. We did not overhaul the engine until after we had drilled sixty-three (63) wells, at which time it was given a complete overhauling in one of your distributor's plant at Kilgore, Texas.

During the entire time that this engine was in service, we did not grind the valves; tighten connection rods; or make any machinery repairs to the engine whatever. Our total expense for repair parts on this engine was less than Fifty ($50.00) Dollars.

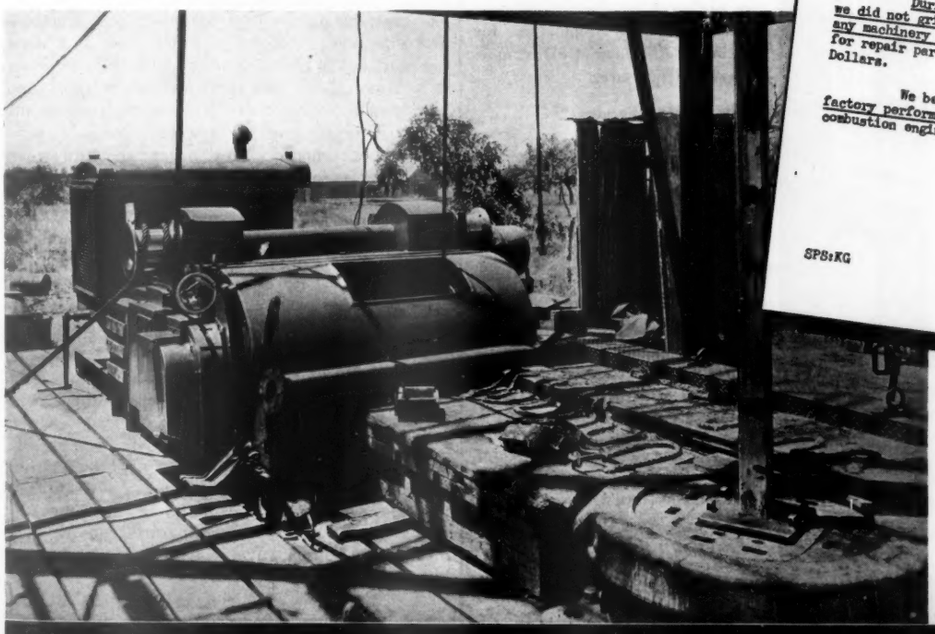
We believe that this is the most remarkable and satisfactory performance that we have ever known from an internal combustion engine used on drilling service.

Yours very truly,

JONES-SHELBURNE, INC.
BY:

SPS:KG

SAM P. SHELBURNE
1101 Petroleum Bldg.



WAUKESHA OIL FIELD ENGINES
more than thirty sizes, four and six cylinders:

Gas - Gasoline - Butane
10 hp. to 335 hp.

Diesel Oil
Convertible to Natural Gas
30 hp. to 325 hp.

Waukesha Engines operating on diesel fuel are of the Hesselman Type, utilising low compression and spark ignition.

WRITE FOR BULLETIN 1019.

WAUKESHA MOTOR COMPANY • WAUKESHA, WISCONSIN
NEW YORK • TULSA • LOS ANGELES

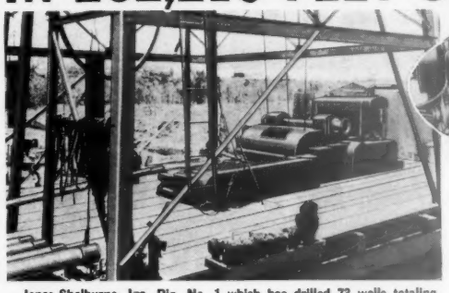
SPEED AND PULLING-POWER WHEN USING VARIOUS GEAR COMBINATIONS

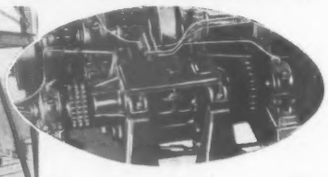
Gear: Transmission	Gear: Drum shaft	Line speed ft./min.	Block speed sec. for hoisting 90 ft. — Number of lines: 4	6	8	Single line pull (lbs.)	Pounds hoisted (net) — Number of lines: 4	6	8	Feet of 4½-in., 17-lb. drill pipe — Number of lines: 4	6	8
High	High	1,782	15.9	22.8	29.4	3,645	9,580	15,900	21,925	563	925	1,290
Intermediate	High	745	31.8	45.7	58.6	7,300	24,190	36,800	48,750	1,420	2,163	2,870
Low	High	336	63.6	91.4	117.3	14,580	53,300	78,800	102,500	3,135	4,630	6,030
High	Low	578	39.5	56.7	72.8	9,050	31,200	46,900	61,750	1,835	2,760	3,630
Intermediate	Low	266	78.8	113.4	145.5	18,050	69,300	99,000	128,450	3,955	5,825	7,560
Low	Low	127	157.8	226.6	291.3	36,125	139,500	202,800	261,800	8,215	11,925	15,380

The above is calculated on a 150-hp., 900 r.p.m. engine with the buoyancy of the pipe offsetting frictional losses and 5,000 lbs. deducted for weight of traveling block, hook, and elevators.

NOT 1¢ FOR REPAIRS

IN 262,210 FEET OF DRILLING





Jones-Shelburne, Inc. Rig. No. 1 which has drilled 73 wells totaling 262,210 feet without failure or repair on the top-flight Cotta Transmission.

Special engineered, precision-built, heavy-duty *Cotta* Transmissions have shown an amazing ability to stand up under tough going . . . *without* failure, *without* costly repairs. If you have a difficult power transfer problem, write us today giving complete details.

An Assurance of Dependable Service

COTTA TRANSMISSION CORPORATION

2340 Eleventh Street, Rockford, Illinois

Special Engineered HEAVY DUTY TRANSMISSIONS

"On Duty or in Competition . . . Fearless as the Dragon."

For Dutiful Performance Depend on Dragon . . .

Since 1912, Dragon Valve and Pump Cups have proved most dependable where dependability counts most—*out there on the job!*

For Deep Wells

They are "tailor-made" by cup builders who specialize in their *one* job—building cups to deliver *extra*-long service.

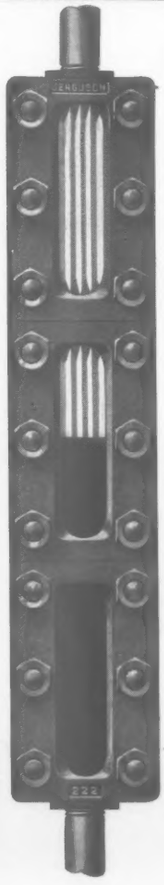
Toughest materials, especially processed to meet rigid tests, Dragon Cups—*Composition, Nobs* and *Leather*—surely take *an over-dose of punishment,* while saving *your* profits, time and nerves.

Specify "Dragon", *every time.*

The Dragon Mfg. Co. Marietta, Ohio.

For Shallow Wells

JERGUSON



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are preferred by the Oil Industry because of their reputation for maximum efficiency at all temperatures and pressures.

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Ideal for tanks, towers, stills, etc., carrying gasoline, kerosene, oil, no matter what the color of the liquid. Furnished with or without valves for every type of service.

When you need to show the color and density of liquids, use Jerguson Transparent (thru vision) Gages.

Jerguson Gages are best By every real test

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85 FELLSWAY

SOMERVILLE, MASS.

being through a chain. Only a special guard need be removed from the hoist housing and the chain installed for elevating the pipe. If it is desired to rotate the pipe in case of a failure of the hoist, the small prime mover can be attached to the rotary countershaft. The V-8 engine is used normally for the running of straight hole tests.

Balance of the drum is tested after it is mounted in the jackpost bearings at much higher speeds than it will encounter in service. The drum flanges, 9 inches wide and 42 inches in diameter, have a surface of 8.25 square feet; the brake bands are built to contact nearly the entire circumference of the flanges having a total contact area of 95 per cent or 7.84 square feet. The brake arm and levers are designed to give a 600 to 1 ratio at the full engaged position. Fins are built inside the drum flanges for circulating air for cooling; free water cooling is also provided.

The drill pipe which has drilled more than 280,000 feet of hole is Grade D, 4½-inch O.D., 13.75 pounds per foot, Pittsburgh pipe equipped with Hughes full-hole tool joints with Acme threads.

The pipe drilled 44 holes before any of the joints were welded and all of the original string is still in use with the exception of less than 200 feet. Only two fishing jobs have been necessary, the first one occurring on the third well and the second one a short time ago. All types of bits have been used with the pipe, an unusually high percentage of them being of the drag type as the rig was used in the East Texas field for a considerable period.

The tool joints were installed at the rig by the drilling crews, the joints first being bucked up with chain tongs and then tonged further with the break-out tongs before running the pipe in the hole. While Mr. Guffey is more than satisfied with the performance of the pipe and tool joints he believes that it is more satisfactory to have the joints installed on the pipe at a machine shop.

Originally the tool joints were 5¾ inches O.D. but they now average 5⅝-inches O.D. A special pair of slips have been built for the over-shot to fit this odd size in case a fishing job develops. The pipe has not shown so much wear as it does not contact the abrasive sides of the hole as often as the tool joints. For lubricant on the tool joint threads a mixture of dry red lead and engine oil has been used. The joints were refaced once in the field as soon as they began showing wear due to the great number of times they had been broken out and made up.

The lighter weight drill pipe (13 pounds per foot) is favored by Mr. Guffey for comparatively shallow depths although he feels heavier pipe is to be preferred for deeper work. He credits part of the long service obtained from the present string to the flexibility due to thinner walls which prevent fracturing when it is bent during the drilling operation. The lighter pipe is also easier to straighten by running it on top of the string after reaching a depth where considerable weight is being carried on the hook.

The rig with which this pipe was used is designed to subject the pipe to as few strains as possible when starting rotation or hoisting. Rotating speeds have been comparatively slow and bit weights comparatively heavy but special care has been taken to adapt the weight and speed to the formation being drilled. From 100 to 150 r.p.m. is a common speed on the rig and weights up to 20,000 pounds are used on the bit. Several drill collars have been used at different times ranging from 20 to 30 feet in length, but no attempt has been made toward a "plumb-bob" effect.

INTERNATIONAL Power...

Engineered for *Plus* Performance

An International PD-80 Diesel Power Unit shown drilling a five-inch hole at a depth of 3,550 feet, at the rate of two feet an hour, for the Stork Oil Co., near Winegars, Mich. International Engines are increasingly in demand for drilling operations—they provide flexible, dependable power for drilling and bring new standards of economy and efficiency to this job.

The Louis Drilling Company uses this International PA-100 Power Unit to power the spudder. This picture shows the outfit at work in the K M A field.

THERE are many sound and practical reasons back of the wide preference for International Power Units. When you buy International you buy low-cost maintenance, long life, and performance and economy that produce profit on the job . . . the result of the skilled engineering that goes into every detail of International Harvester *quality* products. Put your operations on a low-cost basis—with International Power! The line includes 11 different models ranging up to 110 max. h.p., for gasoline, gas, and Diesel. They are used singly or in batteries —two or more can be installed and cut in or out as power requirements vary. Check into these engines and see for yourself how they fit into your operations. The nearby International industrial power dealer or Company-owned branch will demonstrate the efficiency and economy of International Power any time you say.

INTERNATIONAL HARVESTER COMPANY

(Incorporated)

180 North Michigan Avenue Chicago, Illinois

INTERNATIONAL Industrial Power

One of largest lease compressor stations. This has 225-hp. unit operated by the Ellis Petroleum Co. and serves 27 wells

Gas Lift in

By W. N. REES
Atlantic Refining Co.

The method of lifting a fluid by air is by no means a recent invention. It was discovered by C. E. Locher in 1797, and a patent was obtained on the air lift in the United States more than 50 years ago. The air-lift method of producing oil wells was employed at Baku, Russia, in 1899, and greatly increased the production over the crude methods previously used. Late in 1925 gas lifts were used in Tonkawa, which was the first use of this method of much importance in the Mid-Continent. During the latter part of 1926, gas-lift work was started in the Seminole field.

In gas-lift work prior to the advent of kick-off and flow valves, the kick-off pressure was generally much higher than the working pressure used in a well, and depended on the submergence of the point of injection of the lifting medium. However, gas-lift methods used during that period are quite different from modern gas-lift methods and equipment. With present gas-lift equipment, the lifting medium is injected into the tubing string at intervals as it is needed to produce the fluid. Consequently, the kick-off pressure and the working pressure in any particular well are generally the same.

In 1930 kick-off valves were first used in the East Texas field; three years later (March 1933) flow valves were initially used in a well in the vicinity of New London. Since that time the number of gas-lift installations has increased, until at the present time, there are 1,336 wells equipped for gas lift. Of these, 675 are produced by gas lift and 661 have distribution systems installed but are now either flowing or produced by other methods. Due to water encroachment, 300 wells are flowed by gas lift, while 375 wells are using gas lift because their bottom-hole pressures are so low that artificial lift is needed.

There are varied sources of the lifting media used in producing gas-lift wells in the East Texas field. Two hundred and ninety-seven wells are furnished high-pressure gas direct from gasoline plants; 219 wells are produced by residue gas, which has been compressed by booster plants to the required pressure; 93 wells are flowed by high-pressure gas from recycle plants; high-pressure air is used to lift 17 wells; and extraneous high-pressure gas from gas wells is used as a lifting medium in 49 wells.

Because of the high productivity factor of the Woodbine sand, relatively high bottom-hole pressure at the point wells cease natural flow, high-gravity oil, medium depth of wells, gas in solution, and comparatively slow rate of bottom-hole pressure decline in the reservoir, the East Texas field is particularly adaptable to gas-lift production methods. On the other hand, the lack of adequate high-pressure natural gas near the field has handicapped the more extensive use of gas lift.

There are several sources of high-pressure input gas for producing wells by gas lift in the East Texas field. Natural gasoline plants are at present furnishing the lifting medium at the required pressure for more wells than any other source. Wells on gas lift furnish wet gas to the gasoline plants which process the gas and return it as high-pressure residue (250 to 300 pounds per square inch). A constant pressure on the high-pressure residue lines is usually accomplished by:

1. Governing the input volume to the compressor by regulating the intake pressure.
2. Allowing excessive high-pressure residue gas to flow into the low-pressure residue system.

Except when the volume of wet gas to the plant is insufficient to meet the requirements of the system, or on rare occasions when excessive amount of both high- and low-pressure residue is required. the pressure on the high-pressure residue gas lines remains fairly constant. On occasions, when drilling rigs are furnished residue, or when wells are shut in due to proration schedules, it is sometimes impossible for the plants to furnish sufficient residue gas.

Booster plants compressing residue gas furnish the next largest group of wells with a lifting medium. Booster plants are single-stage compressor plants and operate in the same manner as any other type of compression equipment. They merely increase the pressure of the gas from an intake pressure of as low as 50 pounds per square inch to the ordinary working pressures of 250 to 400 pounds per square inch. The principal advantage of the booster plant over other types of compressor plants is that about half of the horsepower is required for single-stage compression as is required for two-stage compression. Consequently, the initial cost of booster plants to do a specified lifting job is much less than that of two-stage compression plants.

The principal disadvantage in the use of booster-plant equipment is that it cannot be operated efficiently unless the intake pressure is a minimum of 50 pounds per square inch. Due to varying demands upon gasoline plants, because of the limited capacities of most residue gas lines as originally installed, and since recent proration schedules went into effect, satisfactory pressures cannot always be maintained. Therefore, forced intervals of shutdown are inevitable.

It is quite probable that, in the future, the trend will be away from this method of operation, particularly where wells producing quantities of water are being gas-lifted. In those parts of the East Texas field where very small quantities of water are anticipated, and where other conditions are favorable, it is entirely possible that booster plants may be used for a number of years without being confronted with an insufficient supply of residue gas.

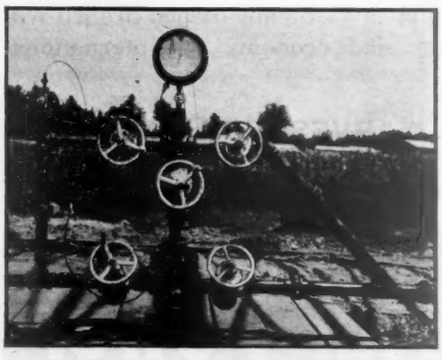
Gaining rapidly in favor with a large number of operators is a type of compressor equipment, which in the future will probably be the most widely used, is the recycle plant. In a plant of this type, a two-stage compressor, cooling tower, scrubber, regulating devices, and intercooler are the principal pieces of equipment required. The principal purpose of the plant is to conserve gas as a lifting medium by recycling it. The wet gas passes from the lease oil and gas separator through the necessary scrubber and regulating devices to the intake of the low-pressure cylinder of the compressor, where it is compressed to approximately 75 pounds per square inch. Upon leaving the low-pressure cylinder, the gas passes through an intercooler, which removes the gasoline condensate that is entrained with the gas. After passing through the intercooler, the gas is boosted in the high-pressure cylinder of the compressor to a predetermined pressure required for its most efficient use as a lifting medium.

W. N. REES

A. P. I.

Paper presented before the East Texas chapter of American Petroleum Institute, Kilgore, Tex., February 7, 1939.

Author's title: "Gas Lift as a Production Method in the East Texas Field."



Commonly used type of well-head, equipped with a recording-pressure differential gauge

Typical well-head hook-up for gas lift in the East Texas field. Note small equalizing line on the right

East Texas

The gasoline condensate, a by-product in the operation of the plant, increases the lease revenue and takes care of a portion of the lease-operating expenses. The usual source of available gas to serve this type of plant is the same as for the booster plant; that is, residue gas from a gasoline plant. However, with the two-stage compression, it is not necessary that the residue line be under any definite pressure. During the operation of the plant, there will be periods when the available wet gas will not be sufficient to supply the needs for input gas. It is then necessary to use gas from the residue system of the gasoline plant. Also, at intervals, there will be an amount of wet gas in excess of the input gas requirements. This excess gas passes to the gasoline plant.

The principal advantages of the recycle plant are:

1. It may be operated almost independently of a gasoline plant.
2. Unless the volumes of water produced by the wells are large, it will not exceed its maximum allowable of residue gas from the gasoline plant.
3. Because of its two-stage compression, it may be used independently of the gasoline plant as an ordinary compressor unit. In this latter case it would not be operated as a recycle plant.
4. Increased lease revenue derived from gasoline condensate.

Because residue gas is available in practically all parts of the East Texas field, air lift has not been used in most cases where flow valves were installed. Consequently, a limited number of wells are flowed by air lift. In the future, when conditions are such that adequate residue gas is not available, or it is impossible to have any residue gas supply, recycle plants will be used in most instances instead of air-compression plants.

In using compressed air as a lifting medium, it is necessary to use two-stage compression equipment. The cost of the initial investment approaches that of the recycle plant, yet the advantages of the recycling method are not available in an air-compression plant. The mixture of gas and air from the wells that are produced by air lift may not be passed to a gasoline plant or be used again in compressor equipment without risking an explosion caused by the mixture when it is compressed.

Until recently the only available extraneous gas for the East Texas field at an adequate pressure for gas-lift operations has been that furnished by a commercial gas company. The use of this gas has been severely restricted because its cost made gas-lift operations less economical than other means of artificial lift. The one purpose for which this gas has been used in connection with gas lift has been merely as make-up gas when a deficiency of residue gas existed in the gasoline-plant distribution system.

During 1938 two high-pressure gas wells were drilled east of the East Texas field near Longview. These wells have an aggregate potential of 33,000,000 cu. ft. per day. It is anticipated that high-pressure lines from the wells to the field, to be used for gas-lift purposes, will be laid in the near future. Whether the gas will be available for other than private use has not been divulged.

During the latter part of 1938 the gas from a high-pressure gas well located about 8 miles west of the East Texas field in the Chapel Hill area was piped into the East Texas field near Overton. From this point a line was laid to the southwest part of the field. At present a north extension is being laid to the W. P. Chism Survey, and construction to date is to the Gregg County line. The gas in this system is to be marketed, and its principal use will be to produce gas-lift wells. A line pressure of 500 pounds maximum is available if desired. The gas well has a potential of 32,000,000 cu. ft. a day, which according to proration schedules is allowed to produce one-fourth of its daily potential.

The method of gas-lifting wells by producing them with extraneous high-pressure gas approaches natural-flow methods closer than any other type of artificial production. The well is produced in most cases by merely opening the tubing valve and allowing the well to flow until its allowable is produced. When high-pressure gas is furnished by a gas well, shutdowns due to lack of gas because of mechanical trouble are reduced to a minimum. Probably any shutdowns which might occur would be due to line failure. It is possible to maintain a constant pressure on the gas lines so long as the requirements do not exceed the potential of the well, because of the ability of a gas well to produce at different rates of flow as gas is needed.

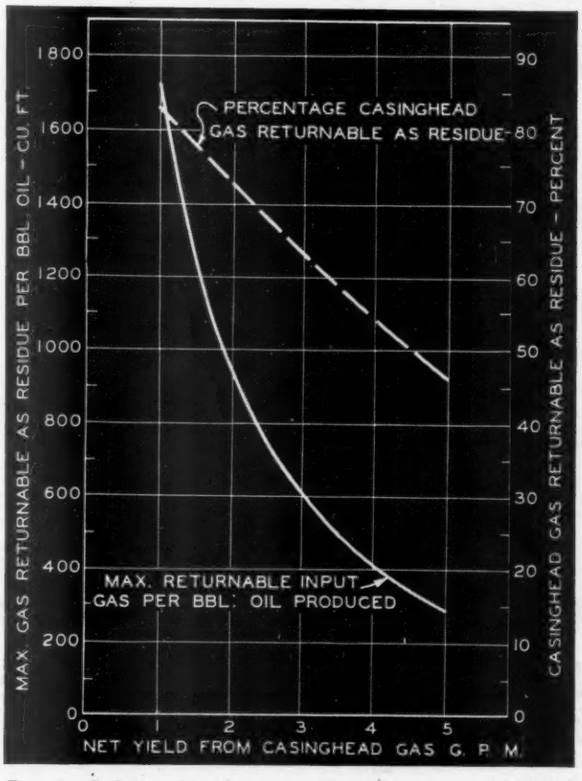
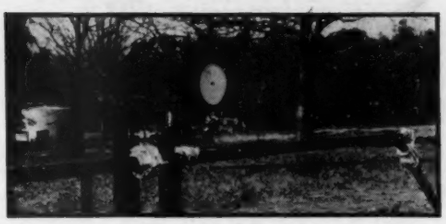
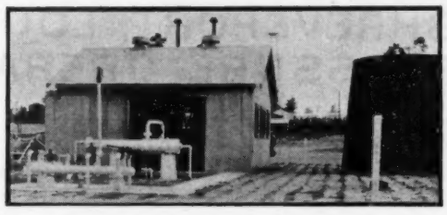


Fig. 1—Relationship between East Texas gas lift and natural gasoline plant operations. Maximum gas returnable data based upon 350 cu. ft. of formation gas per barrel of oil. Percentage of casinghead residue gas returnable taken from N.G.A.A. curve



Metering of gas used in gas-lift work is generally practiced throughout the field. This orifice meter installation on south end lease



This compressor unit utilizes a 150-hp. engine to serve eight wells in the north end of field

The initial cost of equipping a lease for gas lift is greatly reduced when extraneous high-pressure gas is furnished, because the cost of compression equipment is eliminated. At the present time, the principal disadvantages of using extraneous high-pressure gas are:

1. Lack of an adequate distribution system covering the East Texas field.
2. Lack of an adequate supply of gas should a comparatively large number of wells be equipped for gas lift.
3. Cost of gas to the operators.

Application of Gas Lift

Wells in the East Texas field may be placed in the following classifications for the purpose of explaining the reasons for their requiring distinct types of gas-lift installations:

First, that type of well having a sufficiently high bottom-hole pressure for natural flow, but requiring artificial lift due to water. In a well of this kind, the static fluid level is relatively high; the working fluid level is somewhat lower depending on the productivity factor of the well and the rate of production. The number of valves installed in the well depends upon the productivity factor, rate of production expected, percentage of water produced with the oil, casing pressure to be used, and the bottom-hole pressure of the well. Probably the most important to be considered is the productivity factor of the well, because it determines the rate of flow into the well bore and the working fluid level under set operating conditions. A well of this type is usually equipped with 8 to 10 flow valves, but no standing valve or packer is used. Some operators have the erroneous idea that the working fluid level of a well producing a large percentage of water will be relatively high, but it has been found by experience that in a majority of cases the working fluid levels are below 2,200 feet from the surface. In some cases, particularly where a small amount of sand has been drilled, or the

The Shreveport Times

SHREVEPORT, LA., MONDAY, OCTOBER 17, 1938

PRICE FIVE CENTS PER COPY

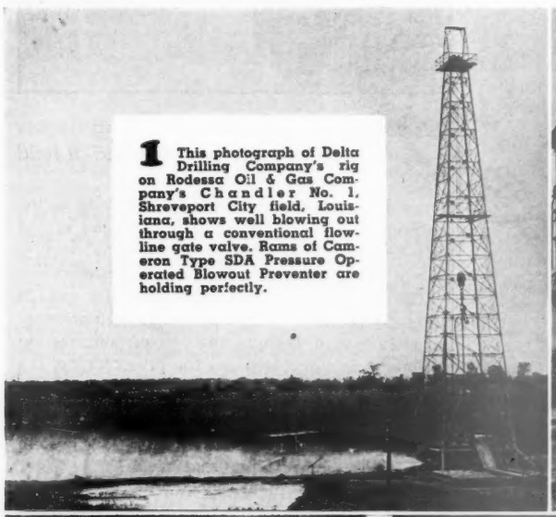
GASSER INSIDE CITY LIMITS WILD

HAZARD GREAT FROM GAS AT RODESSA TEST

Second Well in North Part of City to Go Out of Control; It May Be Capped by Morning

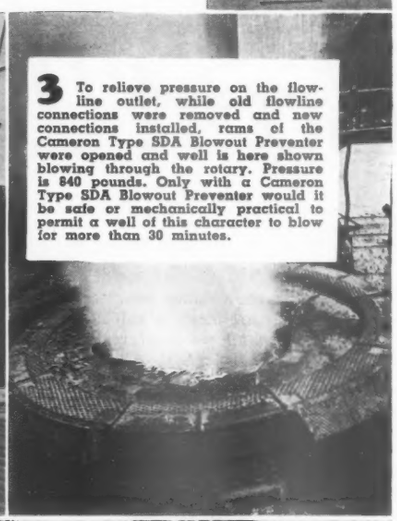
CROWD OF CURIOUS INCREASES DANGER

2 WILD WELLS KILLED IN THE NEW SHREVEPORT, LOUISIANA FIELD WITH CAMERON PRESSURE OPERATED CONTROL EQUIPMENT.

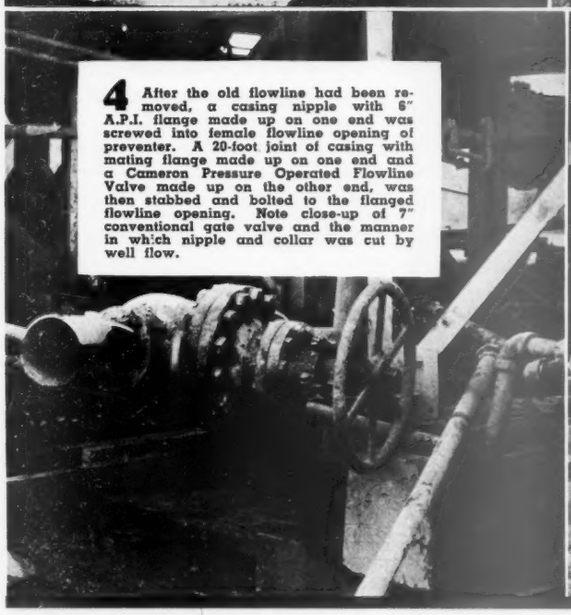


1 This photograph of Delta Drilling Company's rig on Rodessa Oil & Gas Company's Chandler No. 1, Shreveport City field, Louisiana, shows well blowing out through a conventional flowline gate valve. Rams of Cameron Type SDA Pressure Operated Blowout Preventer are holding perfectly.

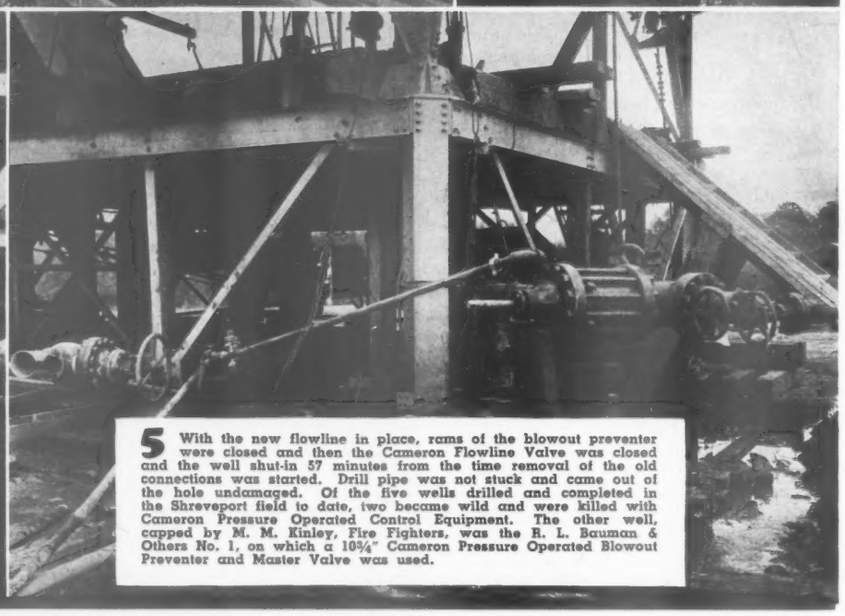
2 Close-up photograph showing members of drilling crew preparing to back out flowline with badly cut conventional gate valve on outer end. Flowline was made up directly in female outlet of Cameron Type SDA Blowout Preventer. Crew members on derrick floor, by their unconcern, reflect their complete confidence in the Cameron Blowout Preventer.



3 To relieve pressure on the flowline outlet, while old flowline connections were removed and new connections installed, rams of the Cameron Type SDA Blowout Preventer were opened and well is here shown blowing through the rotary. Pressure is 840 pounds. Only with a Cameron Type SDA Blowout Preventer would it be safe or mechanically practical to permit a well of this character to blow for more than 30 minutes.



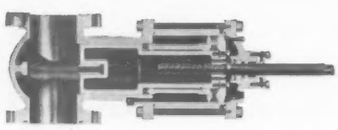
4 After the old flowline had been removed, a casing nipple with 6" A.P.I. flange made up on one end was screwed into female flowline opening of preventer. A 20-foot joint of casing with mating flange made up on one end and a Cameron Pressure Operated Flowline Valve made up on the other end, was then stabbed and bolted to the flanged flowline opening. Note close-up of 7" conventional gate valve and the manner in which nipple and collar was cut by well flow.



5 With the new flowline in place, rams of the blowout preventer were closed and then the Cameron Flowline Valve was closed and the well shut-in 57 minutes from the time removal of the old connections was started. Drill pipe was not stuck and came out of the hole undamaged. Of the five wells drilled and completed in the Shreveport field to date, two became wild and were killed with Cameron Pressure Operated Control Equipment. The other well, capped by M. M. Kinley, Fire Fighters, was the R. L. Bauman & Others No. 1, on which a 10¾" Cameron Pressure Operated Blowout Preventer and Master Valve was used.

Here's Why!

When hydraulic closing pressure is applied to a Cameron Pressure Operated Gate Valve, a heavy cylindrical ram-gate, fitted with a self-feeding ram packing element, moves smoothly and quickly through a horizontal bore at right angles to the well bore. The self-feeding ram packing element contacts the single seat and instantly effects a positive, leak-proof seal. Should the seat be corroded or sand-cut, packing is automatically fed out to fill and seal any inequalities. Even though the seat has been badly cut, as a result of considerable blowing-through, sufficient reserve of packing material is provided to make a shut-off. This valve has no delicate sealing surfaces, and does not rely upon steel-to-steel contact to make a seal. It is the only valve manufactured which can be expected to seal after its seat has been sand-cut or damaged.



Cross-section view of a Cameron 3,000-4,000 lbs. test, Pressure Operated Gate Valve, which is also available in the new series 900 A.P.I.—6,000 lbs. test pressure models.

CAMERON IRON WORKS, INC.

711 MILBY ST. HOUSTON, TEXAS

Export: 74 Trinity Place, New York, N. Y.

well has been plugged back, the working fluid level will drop below 3,000 feet.

Second, the well in the field where salt water encroachment is not anticipated, and where the bottom-hole pressure is sufficiently high to sustain a fluid level in the casing and tubing against the line pressure to a point where the daily allowable may be produced from the well without exhausting all of the fluid from the casing. It is very simple to produce this type of well, and usually from four to seven valves are used, depending upon the bottom-hole pressure and productivity factor of the well.

Third, the well with a relatively low bottom-hole pressure. In this type of well, the fluid level will not rise in the casing and tubing, against the line pressure, to a point where there is adequate reservoir capacity for producing the daily allowable from the well. It is then necessary to either run a closed system using one or more valves, or to bleed the pressure off the casing and tubing at the end of each flow period.

A closed system may be defined as one in which one or more valves are used in the tubing string; a standing valve and a packer are used, but there is no perforation in the tubing above the packer. The tubing is packed off from the casing, and the casing is used merely as a reservoir for the input gas. When the well is produced, the unloading valves, if any, flow the fluid from above the bottom valve. The bottom valve then flows the fluid intermittently from the well as the oil feeds into the tubing.

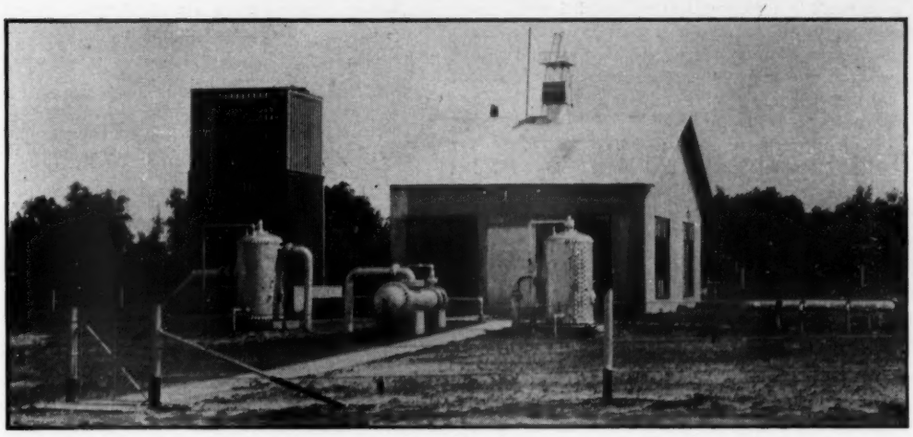
If an open type installation is used, that is, if a perforation is used in the tubing above the packer and standing valve, or if no packer is used, thereby allowing the fluid to accumulate in the casing and tubing while the well is shut in, it is necessary to bleed the pressure off the casing to allow the fluid to rise to its normal static fluid level. If this method is used, there will be a considerable waste of gas each time the casing is bled off. After the bottom-hole pressure has decreased to approximately 300 pounds per square inch, it would be practically impossible to use this method to produce the daily allowable from the well.

Economics of Gas Lift

The general conception of most operators derived from experience in Corsicana, Seminole, El Dorado and similar fields where gas lift operations were used, is that gas lift was quite an expensive method of operating an oil well. In each of these fields, gas lift was used to increase an existing natural flow beyond the point of the reservoir's ability to properly supply the required volume of fluid. The result in nearly every instance was to invite the rapid encroachment of water. This method of operation proved very expensive in the later life of the wells.

The modern method and equipment for gas lifting are totally different from those past practices and equipment. It is now the common practice to produce a well in the East Texas field at a rate and in a manner to retard water encroachment rather than attempt to flow an excessive volume of water from the well to permit the allowable oil to be produced. However, as has been proved by past experiences, gas lift is able to produce very large quantities of fluid when necessary. In the older fields, before the use of flow valves became common, it was impossible to produce wells having low bottom-hole pressures and low productivity factors by the use of gas lift. Flow valve equipment has been developed that now makes it economically possible to produce this type of well by gas lift.

When gas-lift operations are contemplated, several questions arise:



Seven gas-lift wells are furnished gas from this compressor unit located in the middle of the field west of Kilgore

1. Adaptation of gas-lift methods to a particular well or lease.
2. Initial investment.
3. Operating costs.

In those parts of the East Texas field where water has encroached or is anticipated, many operators have been convinced by past experience that it is possible to produce wells to economic depletion without handling a large percentage of salt water. This is accomplished by producing the well at a rate so that the bottom-hole pressure in the well, during the flow period, remains as nearly as possible at the static bottom-hole pressure. However, in the event it is not possible to deplete the well without handling large volumes of water, modern gas-lift methods, by reducing gas fluid ratios to a minimum, have proved to be an economical method of production. The use of gas lift on wells with large quantities of water is economical from an operating standpoint because the major portion of the equipment, where compressor plants are used, is on the surface where it may be readily maintained. The following table shows the results of tests on groups of wells producing from 3 per cent to 90 per cent water:

Group	Per cent water	Oil and water Bbls./hr.	Input gas/ fluid ratio	Input gas-oil ratio	Remarks
A	3	7.89	382	397	Intermitting
B	15 to 30	32.53	117	212	from 2,950 ft.
C	31 to 45	25.12	272	440	Working fluid
D	46 to 60	23.47	274	607	levels were be-
E	61 to 75	20.66	397	1,323	low 2,200 ft. in
F	76 to 90	27.68	404	2,654	most cases.

Probably the gas-fluid ratios will average a maximum of 600 cu. ft. per barrel on wells producing approximately 90 per cent water, and where the working fluid levels drop to 2,500 feet. When flow valves are installed in a well producing water, after a correct setting has been made, data show that on an average they will not require pulling more often than once every two or two and one-half years to be repaired, or to be reset.

In those parts of the field where very little or no salt water is anticipated, wells generally cease natural flow when the bottom-hole presures drop to a minimum of 800 pounds per square inch. If wells are equipped with flow valves at this time, it has been found that they may be produced economically for several years before it is necessary to change the method of gas lifting.

From January 1, 1935, to January 1, 1939, the average bottom-hole pressure in the East Texas field dropped 135 pounds per square inch. This constituted an average rate of decline of 33.75 pounds per year. On the west side of the field, the average rate of decline was less, and on the east side of the field the rate of decline was greater. Assuming the average rate of decline for the east side of the field to be 4 pounds per month, or 48 pounds per year, no change in the gas-lift method should be necessary for a period of at least six years, or until the bottom-hole pressure dropped below 500 pounds per square inch. During this time, the average input gas-fluid ratios should not exceed a maximum of 450 cu. ft. per barrel.

When a well has just ceased natural flow and is produced by gas lift, the input ratio usually varies from 75 to 150 cu. ft. per barrel. As the static bottom-hole pressure decreases, the input ratio increases until usually an input ratio of 500 cu. ft. per barrel becomes the average for a well with a static bottom-hole pressure of 500 pounds per square inch. It has been found that a well in this range of static bottom-hole pressures (500 to 800 pounds), varies in its gas requirements, depending upon its static bottom-hole pressure, productivity factor, and casing size. These are the contributing factors affecting the working fluid level in the well.

When the static bottom-hole pressure in a well declines below 500 pounds per square inch, a change in the method of gas lifting the well is required unless the productivity factor is high. If the productivity factor is high, the rate of "feed in" to the well is sufficient to provide the necessary fluid to make up the deficiency of fluid in the casing for the well's allowable. However, the productivity factors in most wells near and on the east edge of the field are very low; therefore, it is impossible to use an open system type of flow valve installation unless the pressure on the casing is "bled off." If the pressure is "bled off" the casing after each flow period to allow the fluid to rise in the casing against atmospheric pressure, a quantity of gas is wasted which actually exceeds that required to flow the allowable from the well.

By using a closed system type of installation in a well, it is possible to produce the well with a gas-fluid ratio not in excess of 750 cu. ft. per barrel until the static bottom-hole pressure becomes very low. It is the opinion of a number of engineers and operators that with gas-lift equipment now available, it will be possible to produce a large percentage of the wells in the East Texas field to economic depletion, and records show that with gas lift, several wells on the east side have been produced to this point. However, other artificial production methods have proved more successful on some wells in this area than gas lift. It is anticipated that as gas-lift equipment is improved and as gas-lift production methods are more thoroughly understood, wells not now adaptable to gas-lift production methods will come within the scope of future gas-lift operations.

Data compiled over a period of five years show that when the correct flow valve installation has

been made in a well on the east side, it is not necessary to pull the valves for repairs or to reset them more often than an average of once every two or two and one-half years. There are numerous instances where flow valves have been in continuous operation in wells for over three years and are still giving efficient results.

Considerable experimental work has been done with flow valves during the past three years, and much has been learned of the technique of flow valve operation. Because of this, it should be possible in practically all cases to install a set of flow valves and expect efficient operation without the necessity for pulling and resetting the valves several times.

Most of the wells giving trouble are those with extremely low fluid levels and low permeability, and those producing water with a low productivity factor. During the past year considerable work has been done and progress has been made toward eliminating these causes of the trouble.

The initial investment cost of equipping wells and leases in the field varies considerably, and depends on the type of surface and subsurface equipment required. The cost of surface equipment depends on the following factors:

1. Whether high-pressure gas is furnished to the lease from an external source in the amount and at an adequate pressure for efficient gas-lift operations.
2. Type of compressor equipment required. If compressor equipment is to be used, several points to be considered are:
   (*a*) Quantity and pressure of gas available for compression and dependability of source.
   (*b*) Type of compression equipment to be installed.
   (*c*) Size of compressor plant required for both present and future gas-lift operations.
   (*d*) Economic life of wells or lease.

The cost of subsurface equipment depends upon the number of flow valves and other equipment used such as packers, standing valves, etc. In order to make reasonably close estimates of initial installation costs to equip various size leases with various types of equipment for gas-lift operations, it has been necessary to divide the wells in the East Texas field into two distinct groups:

1. Those wells where water has encroached or is anticipated.
2. Those wells where little or no water encroachment is expected.

This division was necessary, primarily, because of the requirement for larger compressor capacity for wells where water encroachment is expected. Estimates of initial installation costs are as follows: (*a*) Those wells where water encroachment is expected:

1. High-pressure gas available at lease property line:

Five-well lease:

Subsurface equipment—well fittings and labor to install, per well	$725.00
Prorata share of distribution system, per well	160.00
Total cost to completely equip well	$885.00

The installation cost per well remains approximately constant whether there are a small number or large number of wells on a lease.

2. Compressor plants: (Compressor capacities based on input gas-fluid ratio of 600 cu. ft. per barrel, 60 per cent water, and 12-hour operating period or 100 per cent overload factor.)

The following estimates include compressor equipment construction work, distribution system, well fittings, subsurface equipment and labor for installing:

1. Booster plant: (Single-stage, gas from residue line.)
(Intake pressure: 50 to 75 pounds per square inch. Discharge pressure: 400 pounds per square inch.)
   (*a*) 5-well lease, $1,500 per well (compressor capacity 320,000 cu. ft. per 24 hours).
   (*b*) 12-well lease or larger, $1,350 per well (compressor capacity 650,000 cu. ft. per 24 hours).

2. Recycle plant: (Two-stage, gas from separator or residue lease.)
(Intake pressure: 0 pounds per square inch. Discharge pressure: 400 pounds per square inch.)
   (*a*) 5-well lease, $2,400 per well (compressor capacity 300,000 cu. ft. per 24 hours).
   (*b*) 12-well lease or larger, $2,200 per well (compressor capacity 660,000 cu. ft. per 24 hours).

(*b*) Those wells where water encroachment is not anticipated.

1. High-pressure gas available at lease property line:

Five-well lease:

Subsurface equipment—well fittings and labor to install, per well	$795.00
Prorata share of distribution system, per well	160.00
Total cost to completely equip well	$955.00

The installation cost per well remains approximately constant whether there are a small number or large number of wells on a lease.

2. Compressor plants: (Compressor capacities based on input gas-fluid ratio of 800 cu. ft. per barrel, and on 12-hour operating period or 100 per cent overload factor.)

The following estimates include compressor equipment, construction work, distribution system, well fittings, subsurface equipment and labor for installing:

1. Booster plant: (Single-stage, gas from residue lease.)
(Intake pressure: 50 to 75 pounds per square inch. Discharge pressure: 300 pounds per square inch.)
   (*a*) 5-well lease, $1,480 per well (compressor capacity 170,000 cu. ft. per 24 hour).
   (*b*) 10-well lease or larger, $1,300 per well (compressor capacity 320,000 cu. ft. per 24 hours).

2. Recycle plant: (Two-stage, gas from separator or residue line.)
(Intake pressure: 0 pound per square inch. Discharge pressure: 300 pounds per square inch.)
   (*a*) 5- to 10-well lease, $1,830 per well (compressor capacity 160,000 cu. ft. per 24 hours).
   (*b*) 20-well lease or larger, $1,500 per well (compressor capacity 640,000 cu. ft. per 24 hours).

Operating Costs

1. Compressor equipment:

(*a*) Maintenance and repairs per b.h.p., per year	$0.90
(*b*) Lube oil at $1.17 per b.h.p., per year	1.17
Total operating cost per b.h.p. of compressor equipment, per year	$2.07

2. Distribution system:

(*a*) Maintenance on lines and laterals at $10.00 per well per year	$10.00
3. Pulling jobs (one per well every two years) at $65.00	32.50
4. Repairs to subsurface equipment at $45.00 per well per year	45.00
Total operating cost of subsurface equipment and distribution system per well per year	$87.50

(*a*) Those wells where it is required to handle a maximum of 90 per cent water.

1. Booster plant: (Single-stage)—required 12.5 b.h.p. per well.

Analysis of operating cost:

Operating cost per well per year of compressor equipment ($2.07 × 12.5 b.h.p.)	$25.87
Operating cost of subsurface equipment and distribution system per well per year	87.50
Total cost of operating one well per year using booster plant	$113.37

2. Recycle plant: (Two-stage)—required 22.5 b.h.p.

Analysis of cost:

Operating cost per well per year of compressor equipment ($2.07 × 22.5 b.h.p.	$46.57
Operating cost of subsurface equipment and distribution system per well per year	87.50
Total cost of operating one well per year using recycle plant	$134.07

3. Extraneous high-pressure gas.

Analysis of operating cost:

Total operating costs of subsurface equipment and distribution system per well per year	$87.50

To the above must be added the cost of the high pressure gas which may be determined by referring to Tables 1 and 2.

TABLE 1—COST OF GAS TO PRODUCE 1 BBL. FLUID
(Data in cents)

Input ratio cu. ft. per bbl. of fluid	Input gas—cost per M. 6c	8c	10c	12c
400	2.4	3.2	4.0	4.8
600	3.6	4.8	6.0	7.2
800	4.8	6.4	8.0	9.6
1,000	6.0	8.0	10.0	12.0

TABLE 2—COST OF GAS TO PRODUCE 1 BBL. OF OIL
(Assuming an input gas-fluid ratio of 600 cu. ft. per bbl.)

Per cent water	Barrels of fluid	Input gas—cost per M. 6c	8c	10c	12c
50	2.0	$.072	$.096	$.120	$.144
60	2.5	.090	.120	.150	.180
70	3.3	.1188	.1584	.198	.2376
80	5.0	.180	.240	.300	.360
90	10.0	.360	.480	.600	.720
95	20.0	.720	.960	120.00	1.44
99	100.0	3.60	4.80	.....	.....

(*b*) Those wells where little or no water is handled.

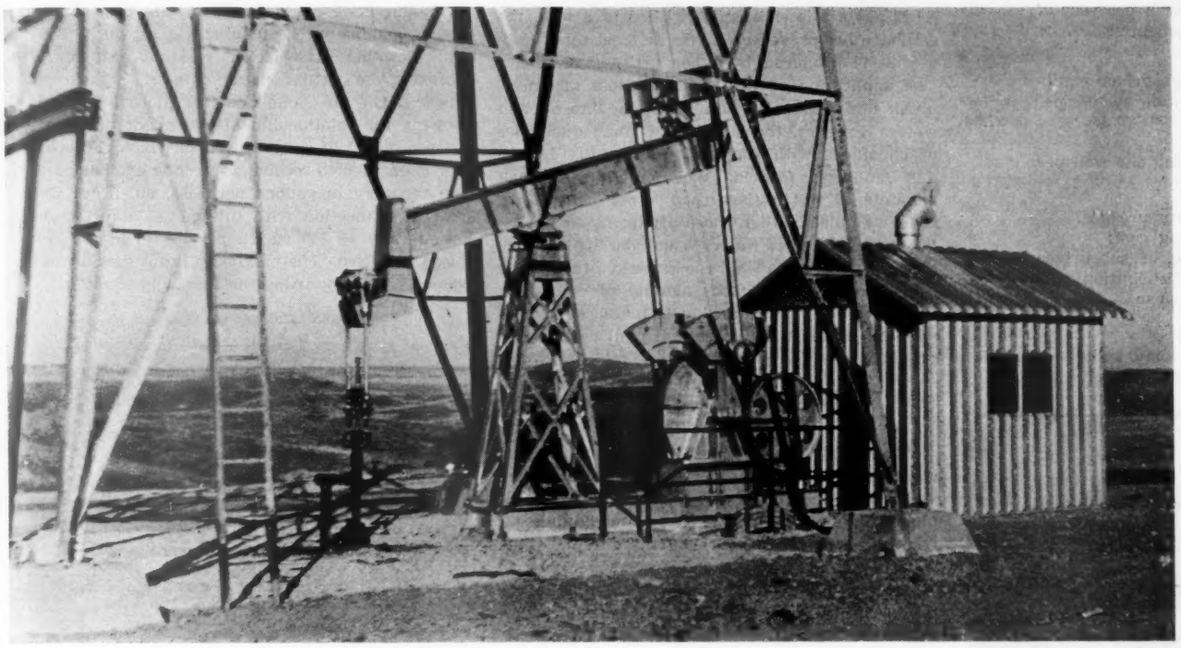
1. Booster plant: (Single-stage)—required 4 b.h.p.

Analysis of operating cost:

Operating cost per well per year of compressor equipment ($2.07 × 4 b.h.p.)	$8.28
Operating cost of subsurface equipment and distribution system per well per year	87.50
Total cost of operating one well per year using booster plant	$95.78

(Continued on Page 74)

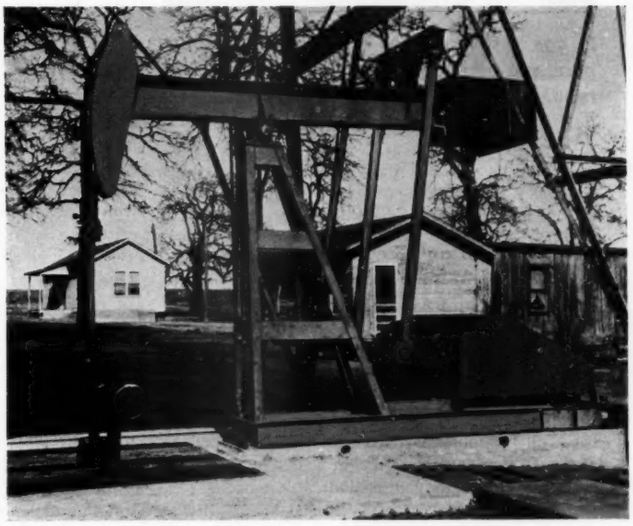
TO SERVE YOUR *Individual* WELL REQUIREMENTS



HAPPY PUMPER TYPE T1-20

Bemis Pool

DIAMOND CHAIN DRIVE



HAPPY PUMPER TYPE T2-5 SPECIAL *St. Louis, Okla. area*

IN *19 years of Service*

BELTING COMPANY

TULSA, OKLAHOMA BRANCHES: Seminole, Oklahoma City, Oklahoma. Ellinwood, Wichita, Kansas. Odessa, Pampa, Texas. El Dorado, Arkansas. Salem, Illinois.

patentees, owners and operators of the exclusive Continuous Vulcanization Process

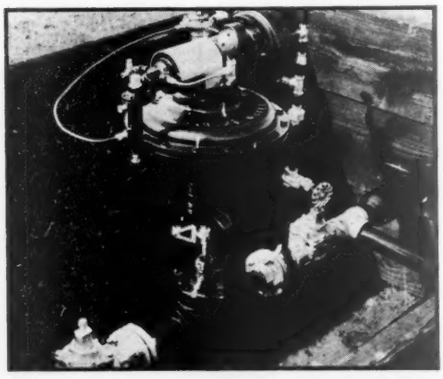
2. Recycle plant (two-stage), required 8 b.h.p.

Analysis of operating cost:	
Operating cost per well per year of compressor equipment ($2.07 × 8 b.h.p.)	$16.56
Operating cost of subsurface equipment and distribution system per well per year	87.50
Total cost of operating one well per year using recycle plant	$104.06

3. Extraneous high pressure gas.

Analysis of operating cost:	
Total operating cost of subsurface equipment and distribution system per well per year	$87.50

To the above must be added the cost of the high-pressure gas which may be determined by referring to Tables 1 and 2. The above operating costs are based on a daily allowable of 20 bbls. of oil per well. These costs do not include amortization, depreciation, taxes, insurance, or labor.



In gas systems which are tied into gasoline plants or other high-pressure supply points, regulators are used on the lease to bring the pressure to the desired point

Paraffin and Emulsion Problems

In wells having low bottom-hole pressures, and consequently slow rates of flow, paraffin accumulation presents a problem which must be handled periodically to allow the well to satisfactorily produce its daily allowable. This is particularly the case when the rate of flow from a well declines to a point where it becomes necessary to produce the well 24 hours each day to produce its allowable. Paraffin accumulates in wells of this type and must be removed periodically whether the well is flowing naturally, produced by gas lift, or produced by any other artificial method. It has been found that the accumulation of paraffin is not accelerated by gas lift, unless the installation is inefficient, or unless there is a continual leakage of gas from the casing into the tubing. Several operators in the field control paraffin accumulation by periodically scraping the walls of the tubing with a paraffin knife. When this is done, paraffin presents a very minor problem and the cost of its removal is extremely low.

Other gas-lift wells do not present any greater paraffin problem than do natural flowing wells. In wells where considerable water is being produced, paraffin accumulation has not occurred, nor is it anticipated. Data show that a number of gas-lift wells, some of which are on the east edge, have each produced in excess of 15,000 bbls. in over 2½ years without having paraffin removed from them. As a rule, wells producing various amounts of water will show a higher percentage of emulsion when produced by artificial methods than during the natural flow. This is caused by turbulence and intimate mixture of the oil and water.

If gas lift is efficiently applied to a well, the emulsion has proved no harder to treat than when a well is produced by other artificial methods. The application of heat will, in most instances, break down the emulsion into pipe line oil and water. However, the addition of small quantities of chemicals with the heat successfully breaks any emulsion formed. Wells producing small amounts of water (less than 5 per cent) form tighter emulsions than those producing somewhat larger quantities of water. When gas lift is inefficiently applied to a well, the excessive turbulence causes an increase in the amount of emulsions. In a stripper well, emulsion is increased due to slippage of gas through the oil and water being produced.

The Effect of Gas Lift on Gasoline Plant Operation

There has been considerable discussion among many of the East Texas gasoline plant supervisors as to what the future outlook will be for those plants that will be connected to, and buying gas from gas-lift leases. Several of the gasoline plant superintendents have already had experience in gas-lift operations in the older fields, and are prone to look on the situation here, and the future use of gas lift in the light of what the situation was before modern gas-lift methods were practiced.

There are a few plants in the East Texas field that are already processing gas from gas-lift leases; operators of these plants are looking upon the gas-lift situation much more favorably than before, as they have found that not only the technique of gas lifting has changed, but that there is now a positive control over high gas-oil ratios which did not exist a few years back. It has been shown through periodical testing of gas-lift wells, and by using such information to advantage, that it is possible to reduce the input gas oil ratios on the higher ratio wells as much as one-third to one-half of the original volume required. By periodical testing, a few high ratio wells are quickly picked out, and valves reset to meet the changed conditions in the well. The results of such tests show that, over a period of one year, the overall input ratios have been decreased as much as 30 per cent, even though the wells have gradually become weaker, and necessarily require more energy for producing from lower fluid levels. The results have been advantageous to the operator by insuring efficient operation and production control.

Since an additional volume of gas is produced with the oil from a well when gas lift is used, the amount depending largely upon the input gas-oil ratio, it is readily understood that the gasoline plant will be required to process more gas per barrel of oil produced than it would if the well was flowing naturally, or perhaps produced by another method. This may cause the plant to either operate nearer its capacity, or in some cases may call for additional equipment.

Should a gasoline plant furnish residue gas at the required pressure for gas-lifting wells, usually changes in the plant and distribution systems must be made. The gasoline plant is the logical distribution point, in most cases, for furnishing high-pressure gas to produce gas-lift wells, because it has a large capacity for storing gas and has positive control over the volume of residue gas returned. This places it in a position to take care of the fluctuations in the amount of gas required by the operator, and of the volume of gas returned to the plant. The cooperation between the operator and the plant by frequent checks on the volume of residue gas used and of wet gas returned, makes possible the efficient use of gas lift for producing wells.

The percentage of casinghead gas returnable as residue after extraction and plant use, plotted against gallons per 1,000 cu. ft. (as shown by Natural Gasoline Association residue gas curve, plotted from actual plant data) is shown in Chart 1. On the same chart is plotted a curve showing the relationship of the maximum input gas per barrel of oil produced to which the operator is entitled to receive as residue against gasoline recovery in gallons per 1,000 cu. ft. of wet gas. In connection with this curve, a formation gas-oil ratio of 350 cu. ft. per barrel of oil produced was used. The maximum input gas-oil ratio was calculated by using the following equation:

$$I = \frac{\%\, F}{1 - \%}$$

The equation was derived as follows:

$$F + I = T \text{ and } R = \%\, T$$

$$I = R$$

therefore

$$(F + I)\ \% = I$$

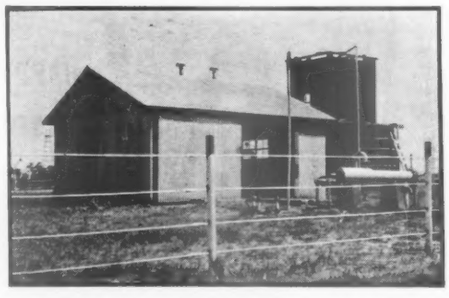
then

$$I = \frac{\%\, F}{1 - \%}$$

where

- F = formation gas-oil ratio per barrel of oil produced (350 cu. ft. per barrel average)
- I = maximum input gas-oil ratio that may be used
- R = maximum returnable gas per barrel of oil produced
- $\%$ = per cent of wet gas returnable as residue (depends upon the g.p.m. of the wet gas)
- T = total wet gas to gasoline plant per barrel of oil produced.

By using Chart 1, the maximum residue gas allowable for any particular lease may be determined, knowing, of course, the gasoline content of the wet gas for the period covered by the last test.



Small compressor stations serving individual leases are being installed in many cases. This unit is typical

Booster plants depend upon the gasoline plants for their residue gas. Therefore, their relationship with the plants is similar to that of the operators being furnished residue gas at the required pressures for gas lifting their wells. Practically the only difference lies in the pressure on the residue lines.

Summary

Rapid strides have been made during the past few years in gas-lift equipment and methods, and with their continual improvement, gas lift as a production method is destined to play an important part in the future production of the East Texas field.

The surface and subsurface equipment must be correctly installed to give the desired efficiency

of operation. Operating costs may be kept at a minimum by periodically running flow tests on the wells, and by repairing and resetting the flow valves in those wells where high gas-fluid ratios exist.

The lifting medium for future gas-lift operations will probably be supplied by gasoline plants and extraneous high-pressure gas. The gas available from gasoline plants will become insufficient for gas-lift operations where large volumes of water will be handled.

The quantities of extraneous gas to be used will be dependent upon the cost of gas to the operator, and upon future development of high-pressure gas reserves.

Acknowledgements

Special thanks are extended to the executives of Atlantic Refining Co. for permission to prepare and present this paper, and to engineers and production men of various companies for valuable assistance in furnishing data and suggestions in the preparation of the paper. Thanks are also due the representatives of the manufacturers of compressors, and other gas-lift equipment for their full cooperation in supplying information and valuable suggestions.

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For a more complete discussion of some of the points mentioned in this paper reference is made to the following literature:

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GREASES

(Continued from Page 50)

are by no means standardized. An example will serve to bring out the point.

While penetration may be measured on worked or unworked samples, the worked penetration is most used, because the figure for the unworked grease is often unreliable. The measurement is commonly made at 77° F. It is useful for manufacturing control, and it is this value—worked penetration at 77° F.—which is widely used in specifications. By experience it is sometimes known that grease having a definite worked penetration at 77° F. will be satisfactory at the temperature of operation; this latter value, however, is usually much above 77° F., and it is that temperature which might more properly be specified o na grease for a given application. In a specific example, six greases on the market were available for the service in question, showing penetration in the range 20 to 30 mm./10 at 77° F. The operating temperature of the bearing for which these greases were intended, was, however, in the neighborhood of 180° F. Measurement showed that the penetration-temperature curves for the six samples varied considerably, some of those which were harder at room temperature being so soft at the operating temperature as to be unusuable. The curves in Figure 4 illustrates the point. Note that Sample D is the softest at room temperature, but is moderately hard at 180° F., while Sample C is harder at room temperature, but is so soft as to be unusable at the higher temperature.

In this case, the purchaser unconsciously depended on the manufacturer to keep him out of trouble, but specified so much that there was little latitude in which to do it. None of the composition or property specifications really evaluated this grease for usefulness under operating conditions.

The above is probably an average case. There are worse ones in which the purchaser's specifications may be actually misleading. A greater degree of frankness by the purchaser as to conditions of service and a willingness to consult the maker as to what he should use would be very helpful. Another improvement could be made if the purchaser would realize that high speeds and heavy duty have put competitive buying of cheap lubricants into the class of short-sighted procedures. It is often true that lubricating cost is of the order on one-half of 1 per cent of total operating costs, while the price of deterioration and shut-down is extremely high. The best lubricant will be the cheapest, and complete frankness as to operating conditions will help to find this best lubricant. In the final analysis, specifications must govern functional properties; otherwise they become a source of trouble for all concerned.

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SAFETY — In Machinery Design a General Warning

Oilfield machinery need not be dangerous, and in recent years the practice of constructing production equipment with only utility in mind has been supplemented by attention being paid to the safety of the workmen who must operate the machinery.

Pictured above is a large pumping jack of the type used in the Oklahoma City and other deep fields. By the use of a double fulcrum principle, a longer stroke is possible and the polish rod is not subjected to any bending as the jack head moves in a vertical line.

These jacks require oiling at frequent intervals and require adjustments the same as any piece of machinery. For this purpose the manufacturers have installed ladders on three sides of the jack so the pumpers will have easy access to the higher parts of the machines. Steel grids are provided for platforms on which to work while repairing or oiling the jack and they are adequately fenced to prevent a workman from stepping backward and falling to the ground.

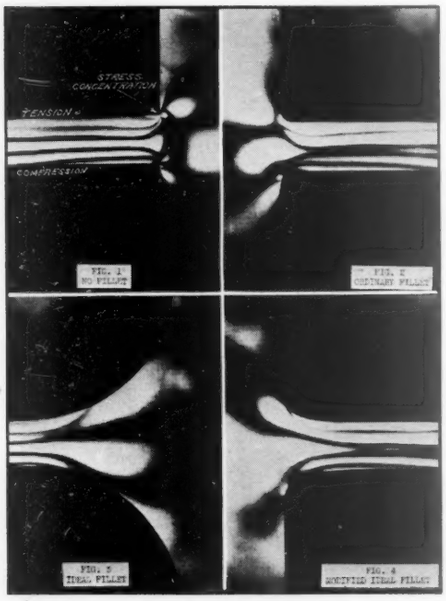
The producing company, in this case the Continental Oil Co., has installed signs bearing the legend "Do Not Oil While in Motion" on all their jacks. This is a constant warning to pumpers that there is danger of injury when working around moving machinery. The jack is shut down at regular intervals for oiling and greasing and in case emergency oiling is necessary, the pumper has instructions to shut down the pumping unit.

Continental also furnishes their foremen and men with books showing the proper position for different tasks such as carrying, lifting, etc., and a list of instructions of what to do and what not to do. By this preparatory instruction, by constant warnings, by providing safe machinery on which to work, this company has reached an enviable position in accident prevention work.

Progress in METALS

By W. L. NELSON

The research work and practical testing that backs the valves and fittings of the foremost supply houses is seldom realized by the layman or even engineer.



The Crane company has recently held an open house at its Chicago works which revealed a notable expansion in its research and engineering program. The research facilities of this company now occupy two two-story buildings having a floor space of 86,000 square feet and requiring a staff of 285 scientists and engineers.

In addition to the regular laboratory testing equipment, etc., the Crane company has special facilities which are described in the bulletin entitled "Crane Research Laboratories," for study in the following fields:

Radiography, welding, ceramics, heating and air conditioning, metallurgy, library research, industrial products, photography, sanitation, mechanical design and development, hydraulics, basic science, and works control.

Figures 1, 2, 3, and 4 are photographs indicating the degree of stress concentration that occurs with various fillets, and Figure 5 shows the temperature control panel for a battery of creep-testing furnaces.

Corrosion Through Paint

Abstract: "Pretreatment of Metal Surfaces for Painting," by F. N. Speller, Ind. Eng. Chem. 30, 1152. October (1938).

All paints are permeable to moisture to some extent, and at such points as moisture may penetrate, the metal is damaged by corrosion and the inner paint film becomes even less resistant to moisture penetration. Thus, the physical protection offered by paint must be coupled with chemical protection at the metal itself if immunity to corrosion is to be attained. The use of zinc chromate and red or blue lead in the primer coat of steel paints, as inhibitors to corrosion, has long been known to assist in preventing corrosion. More recently, certain water-inhibitive solutions which contain essentially orthophosphoric acid or chromic acid have appeared on the market as agents to be applied before painting. In some cases these water solutions of inhibitors have proven to be advantageous.

The preparation and cleaning of the metal surface prior to painting is of primary importance. Methods of removing mill scale from steel are:

1. Loosened by exposure to atmosphere for several months. Some pipe line builders have purchased the pipe in advance and have allowed it to become weathered during transit and on the job.

2. Sand blasting. A successful method except where dust becomes a major problem.

3. Pickling in hot dilute acid. Sulfuric acid has long been used but more recently a final wash in dilute phosphoric acid solution has been used. These and other cleaning methods followed by slight warming of the surface to remove traces of moisture are conducive to good paint adherence and less moisture penetration.

Phosphating of surfaces has been found to be one of the most effective means of getting good adherence and less corrosion. Some of the methods used are the Parkerizing, Electrogranodine, and Bonderizing processes. Reference has already been made to the use of water solutions of inhibitors and pickling with phosphoric acid. (A discussion of the results of Bonderizing is given on page 1147 of the same issue of Ind. Eng. Chem.)

"It is evident that metal corrosion and the paint problem are intimately related. To obtain the best protection of iron and steel by paint, proper preparation of the surface is of fundamental importance. This includes, at least, removal of all foreign matter not tightly bonded to the metal or unsuitable as a base for paint. Various methods for removing mill scale under different conditions of service have been discussed. The surface should be actually dry, preferably warm, and free from reactive substances when paint is applied.

"Water solutions of inhibitors applicable at normal or higher temperatures are being developed that react with the metal to form inhibitive films. The rate of this reaction decreases with the temperature so that precautions must be taken to insure either the completion of the reaction or the removal of all soluble material that has not reacted before the surface is dried prior to painting.[1] Properly applied, this treatment in certain cases has been found to improve paint adhesion; it tends to polarize the iron mill-scale couple, and to reduce local differences in potential. The advantage of an efficient inhibitive pigment in the priming coat is now generally recognized. The combination of an inhibitor properly applied to the metal and in the priming paint tends to reduce further the chance of destruction of the bond between paint and metal by corrosion. However, practical value of these low-cost water inhibitors to fabricated or structural steel has not been fully demonstrated by long-time tests in service. The remarkable developments in paints and painting technique in recent years have been accomplished gradually by testing and experience. The successful application of water-soluble inhibitors to the metal on a large scale will probably have to go through a similar process of development. Where better and more expensive paints are to be applied, it seems still more important that all necessary precautions be taken in the preparation of the surface.[1]

"Recent tests and experience indicate that, as a rule, when carried out with all necessary precautions, the most desirable preparation of steel surfaces for painting (particularly for underwater service) is complete descaling, followed by phosphating or similar chemical treatment."

[1]After this paper was written, the American Society for Testing Materials set up a new subcommittee (XXIX of Committee D-1) on Preparation of Iron and Steel for Painting. This subcommittee should be a good medium for testing all factors having to do with preparation of the metal surfaces for painting.

Fig. 5—Accuracy of creep tests depends on precise control of temperature as recorded by this panel

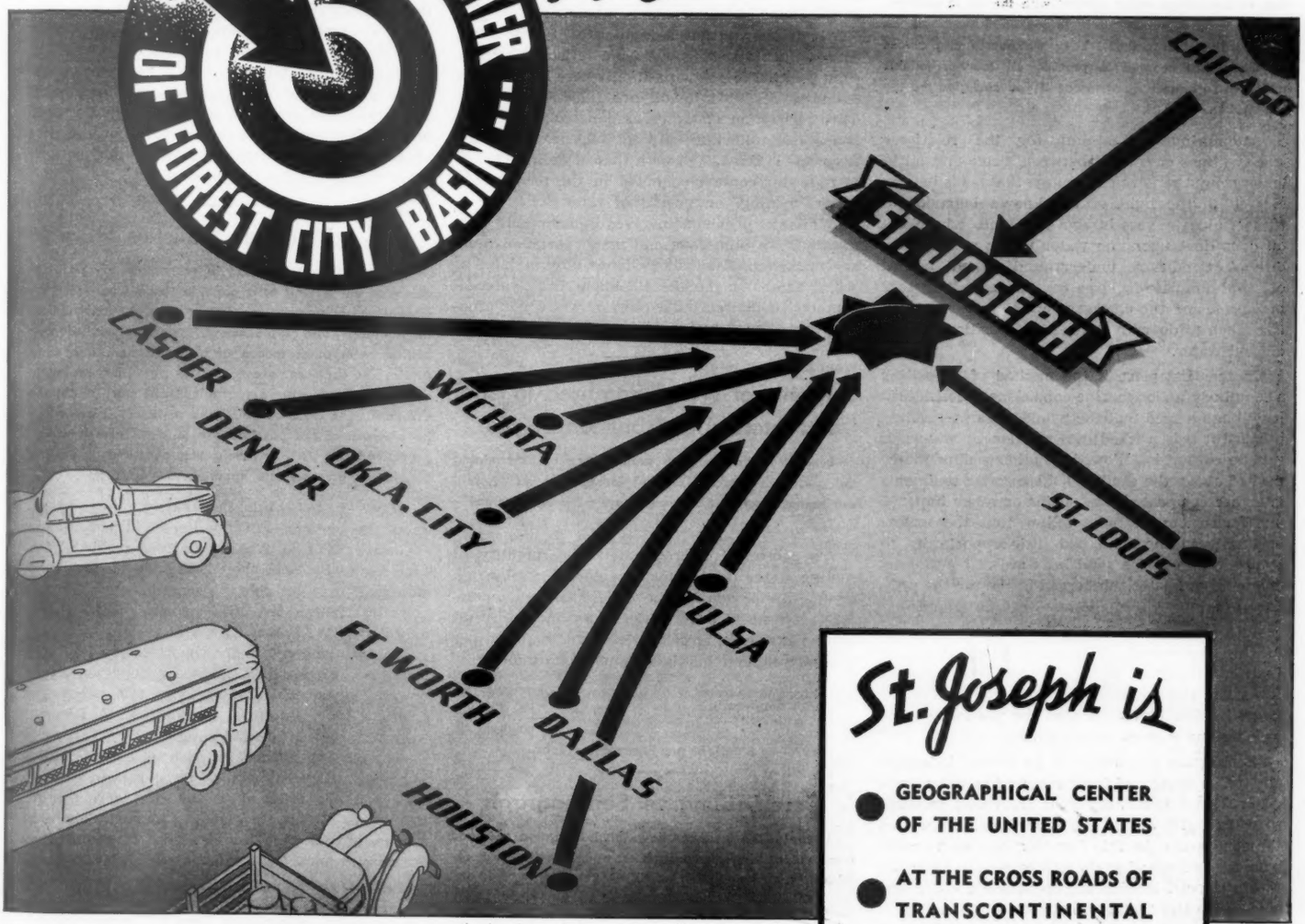
Gas Sales Engineering Book

The American Gas Association will produce this year a complete sales-engineering handbook for the use of those who sell, service, or utilize gas-fueled internal combustion engines. The work will be under the direction of D. W. Reeves, Oklahoma Natural Gas Co., Tulsa, newly appointed chairman of the gas engine power committee. Mr. C. Remschel, Southern Counties Gas Co., Los Angeles, has outlined the content of the book and has contributed material.

ST. JOSEPH

THIRD LARGEST CITY IN *Missouri*

IN THE CENTER OF FOREST CITY BASIN ...



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PROBLEMS FROM READERS

Edited by L. G. E. Bignell

Underground Contacts of Fluids Not Really Shown by Straight Lines

In many articles I have noted mention of "edge water," "coning," and "nosing" of water in the oil fields. Also I have seen drawings of ideal anticlinal structures with the gas above the oil and the oil above the water, each zone separated by straight horizontal lines. Has it been demonstrated from field experience that the water level of any field is an approximately level line or does edge water contact with the oil in approximately vertical planes? I have looked through all the geological literature that I have without coming across anything that seemed to provide an answer to this question, so I am writing to see if you can give me the information.—D. E. I.

Attempting to account for the relatively straight lines of contact between water and oil in underground reservoirs requires that pools be considered in the light of the known behavior of these fluids in vessels above ground, where the oil does float upon the water under normal conditions. Conditions underground do not permit oil to accumulate in large cavities, except in rare instances, and the character of the reservoir rock has much to do with the relative positions of the oil and water.

In the first place if the method of depositing a sand body under marine conditions is considered it will be realized that the whole mass was wetted because it was washed into position by water. If this deposition is followed by other sediments deposited above the sand and these softer sediments later are compacted into shales or other impervious formations, it must follow that the waters originally in the sand had little opportunity to escape. Even if the sand beds are of continental character and later submerged in the sea the presence of water within the mass can be assumed.

In a paper by Dr. Allen D. Garrison, professor in the department of physical chemistry, Rice Institute, Houston, Tex., on "Selective Wetting of Reservoir Rock and Its Relation to Oil Production," he directs attention to the phenomenon of wetting any surface with a liquid.

Each grain of sand must be wetted independently. The energy of force required to wet a sand grain with water is different from that required to wet it with oil. If the water has first wetted the sand grain the thin film that has been spread over the individual grain will be retained because the interfacial tension set up between water and silica is greater than that between oil and silica.

This seems to indicate that the contact between oil and water in underground reservoirs involves irregular surfaces and that connate waters may be entrapped in individual sand lenses from the time of their inception and move as soon as the static conditions that have existed in the reservoir since it was brought to equilibrium are disturbed.

Doctor Garrison states that it is "concluded that oil and water cannot separate completely into layers in the reservoir, but must set up a definite equilibrium in which water fills all the pores having sizes below a certain magnitude. This critical size depends upon chemical nature, on elevation, and on the physical constants of the oil and water. In order that a well shall flow nothing but oil, it is necessary that the oil flow to the well bore through the larger pores at such a rate that it does not cause the water to advance from its equilibrium position in the smaller capillaries to a point where it is forced along with the oil.

"It is shown that the advancing position of the water into the larger capillaries and, thus, into a position where it is more likely to be transported along with the oil, is dependent on the interfacial tension of the oil-water contact, the wetability of the reservoir materials by water and oil, the relative densities of the liquids, the elevation, as well as the shape and dimensions of the pores.

"It is shown that a high rate of production causes the water to move from its static equilibrium position to a new position where larger pores formerly occupied by oil are filled with water. This conception of water as a network of capillaries in equilibrium with the oil throughout the reservoir is contrasted with that of definite levels of oil-water contact connated in the terms 'edge water,' 'coning,' or 'nosing' of water."

While the problems involved in answering your question are numerous and many variables must be considered, from all evidence now at hand it seems safe to make the statement that water-oil contacts in underground reservoirs are not properly represented by straight or level lines.

Quantity of Water Required to Cool An Internal Combustion Engine

I want to find out the proper way of determining the quantity of water needed for cooling an internal combustion engine. Can you give me the information?—E. T. D.

To determine approximately the quantity of cooling water needed for an internal combustion engine, divide 480 by the difference in temperature between inlet and outlet water and the result will be expressed as gallons of water required per horsepower hour for the engine. For example:

Outlet temperature	150 deg.
Inlet temperature	90 deg.
	60 deg.

480/60 = 8 gallons per horsepower hour.

Core Drilling vs. Seismograph

I would like to know how the information obtained from using the seismograph compares with that obtained from core drilling.—S. E. F.

If we understand your question correctly it is our opinion that either type of data should be satisfactory for the purpose for which it is secured. Core drilling is undertaken when the formations are covered with loose material and key beds are not exposed. By drilling a series of holes to key beds and then plotting the data obtained it is possible to contour a structure that would otherwise be hidden. The seismograph is used to secure evidence of subsurface conditions and the data secured can be used to develop evidence of underground conditions and in this manner locate structures that might be favorable for trapping of gas and oil. For more complete and detailed information of these and other geophysical methods you are referred to "Practical Oil Geology" by Dorsey Hager.

Seat of Brass and Composition Disc Advised for Low-Pressure Duty

Will a brass disc against a steel seat prove serviceable in a check-valve taking care of low pressures, say about 1-inch of oil? Or would it be better to use a steel disc against a steel seat?—L. M. N.

For this low-pressure duty it is recommended by engineers that a valve with a composition disc and a brass seat be used, for it could be closed tight without exerting great pressure and give the best service, provided the oil is not highly corrosive. As an alternative to the brass seat and composition disc type of valve a ball-type check-valve is suggested with steel ball and brass seat. The brass disc against a steel seat is not recommended because of the tendency to cut the disc against the much harder seat in making shutoff of oil stream under low head.

Pipe Line Statistics

I am a student majoring in economics. My problem concerns the writing of a paper on pipe lines from the angles of government regulations, cost of construction, maintenance and replacement, extensiveness of use, conflict with other modes of transportation, and their future. The professor seems to think pipe lines are without a future basing his argument in part upon the eventual exhaustion of petroleum resources. However, I have heard of the possible use of pipe lines to transport powdered coal. Any help or suggestions you might be able to give will be appreciated.—C. S. B.

Many answers to the questions you have raised about the economics of pipe lines will be found in a book written by R. Van A. Mills entitled "The Pipe Line's Place in the Oil Industry." It is possible you may be able to secure a copy of this book by writing Mr. Mills in care of the Continental Oil Co., Ponca City, Okla.

You are referred to the report of the Rayburn committee of the U. S. House of Representatives on pipe lines. This report is in two parts and copies might be secured from the U. S. Government Printing Office, Washington, D. C.

For other general data such as cost of building pipe lines of all kinds, statistics, and general data you are referred to the past annual pipe line issues of The Oil and Gas Journal. There is a map of the pipe line systems of the United States in a pocket in the back of Mr. Mills' book.

Formula, Finding Tank Capacities

We would like to secure some kind of a handbook containing the rules for finding the capacity of all kinds of tanks used in the oil industry, and also containing tank tables and other useful information along that line.—E. R. T.

It is suggested you secure a copy of "Practical Petroleum Engineers' Handbook" by Joseph Zaba and W. T. Doherty in which you will find a chapter on Tank Strapping which contains the information you desire. You might also secure some useful information if you write to the manufacturers of the various kinds of tanks because most of them have prepared some kind of tank tables for distribution.

QUESTIONS ON TECHNOLOGY

By Charles K. Francis, Ph. D., Technical Editor

Isooctane Specifications by United States Bureau of Standards

We desire to obtain very close specifications covering the properties of isooctane and normal heptane. If you can furnish this information it will be of much assistance.—E. H.

The investigations of isooctane by Donald B. Brooks, National Bureau of Standards, have indicated the physical properties required to obtain isooctane of highest purity.

This specification is intended to limit the impurities allowable in the isooctane, 2, 2, 4-trimethylpentane, certified for use as a primary standard for knock rating so that differences from one lot to another shall not be appreciable by engine testing.

To be certified for use as a primary standard reference fuel for knock rating, isooctane shall have a knock rating, when compared with pure 2, 2, 4-trimethylpentane, of not less than 99.90 nor more than 100.10.

For the present, material submitted for compliance with this specification shall be deemed acceptable when the following tests made by the National Bureau of Standards show its physical properties to be within the limits given below.

1. The freezing point of the sample shall be not lower than —107.53° C. when determined by the apparatus and method given in National Bureau of Standards Scientific Paper No. 520, pages 622 to 624, except that a platinum resistance-thermometer shall be used in place of a thermocouple.

2. The boiling point shall be determined by distilling the sample through a 10-inch jacketed column, into which a platinum-resistance thermometer is inserted. Current through the jacket heating coil shall be so adjusted that the reflux from the thermometer shall be five to six drops per minute, and the still-pot heater shall be adjusted to cause distillation to proceed at the rate of 5 ml. per minute under these conditions, when 50 per cent has been recovered, the temperature indicated by the platinum resistance-thermometer shall not exceed 99.30° C. when corrected to an atmospheric pressure of 760 mm. Hg in accordance with the equation of Dr. E. R. Smith. Furthermore, the increase in the temperature so indicated when 80 per cent has been recovered over that when 20 per cent has been recovered shall not exceed 0.060° C.

3. The density of the isooctane, when measured at 20° C., shall be not more than 0.69200 gm. per ml. nor less than 0.69180 gm. per ml.

Note.—Specifications for normal heptane will be published later.

References: Donald B. Brooks, J. Research, 21, 847, 1938. Smith equation, J. Research N.B.S., Vol. 20, No. 5, pages 641-650, 1938.

Asphalt-Primer for Waterproofing and Roofing

What is the composition of the product asphalt-primer which is used for waterproofing concrete?—E. I. R.

Asphalt-primer is a solution of asphalt in a petroleum or hydrocarbon distillate. This material is covered in a federal specification for asphalt-primer for roofing and waterproofing. The following is quoted from this source.

"Asphalt-primer shall consist of an asphaltic base thinned to suitable brushing consistency with a volatile solvent. The asphaltic base, separated as in the next paragraph, shall be not less than 35 per cent by weight and shall have the following characteristics:

	Maximum	Minimum
Softening point (ring and ball method)	77° C. (170° F.)	55° C. (131° F.)
Penetration (hundredths of a centimeter) at 25° C. (77° F.)	50	15

"About 250 grams of the primer shall be distilled with steam until no appreciable amount of solvent distills over. Heat the residue, with constant stirring, until all of the water is expelled and there is no further danger of foaming. The distillation is best carried out in a cylindrical copper still in which the water may be removed from the residue by heating with a ring burner; starting with the burner placed near the top and gradually lowering it. The temperature must not exceed 150° C. (300° F.). Transfer the residue to an oven at 105° to 110° C. (221° to 230° F.) until any remaining solvent is removed."

The distillate and residue is further examined by redistilling the distillate and testing the residue as in the inspection of asphalts. "This specification applies to asphalt-primer intended for use, when specified as a priming coat for concrete, gypsum, and other masonry surfaces over which asphalt built-up roofing, waterproofing. or dampproofing are to be applied."

Reference: Federal Specification SS-A-701, Asphalt-Primer for Roofing and Waterproofing. Government Printing Office, Washington, D. C.

Melting Point of Wax by A.S.T.M., American and English Methods

What is the difference when indicating the melting point of paraffin wax for marketing purposes by American, English, and A.S.T.M. methods?—M. I. A.

The A.S.T.M. and the English melting point of paraffin wax are the same, both being 3° F. lower than the American melting point temperature.

The common practice is to use the English or A.S.T.M. temperature when grading American wax by melting point both for specification and sales purposes. The American melting point seems to be an arbitrary figure with no foundation in fact.

CHEMICALS FOR THE PETROLEUM INDUSTRY

Xylene

Use—Increasing octane value of motor fuel.

Form—Colorless liquid.

Formula—$C_6H_4(CH_3)_2$.

Specific gravity—0.8811.

Melting point— —17° F.

Boiling point—291° F.

LIMITATIONS

Specific gravity, min.	0.875
Melting point, °F.	—17° to —20°
Boiling point, °F.	290° to 293°
Octane rating, min.	100

Note: There are three xylenes: ortho, meta, and para. The properties stated are those of ortho xylene.

Treatment of Crude Oil for Reducing Hydrogen Sulfide

Will you please inform me whether there is any known means for removing sulfur from sour crude oil, which could be used commercially?—G. A. S.

There is a quite general practice to include under the term sour all crude oils that contain a large quantity of sulfur but more frequently it is applied to those oils with a marked disagreeable odor due to hydrogen sulfide. When the sulfur is present in other forms than hydrogen sulfide, treatment ahead of the normal refining operation is seldom advisable, because of the expense. The hydrogen sulfide oils are often pretreated for the removal of this compound and the consequent reduction of the quantity of sulfur.

Where a good quality water is available, in large enough quantities, a crude oil containing hydrogen sulfide may be improved by a water wash, due to the fact that one part of cold water will absorb over four parts of hydrogen sulfide. A solution of sodium hydroxide in water, known as caustic soda solution, removes free hydrogen sulfide because it unites with sodium to form sodium sulfides, the quantity removed by the reaction depending upon the concentration of the solution.

The partial purification of crude oils in advance of the refining process is now the subject of much serious study. The corrosion of refinery equipment due to hydrogen sulfide and salt has been found to be extensive, so when these substances are present in a crude oil in appreciable quantities pretreatment is always advisable.

Naphtha From Bay City Field in Matagorda County, Texas

Could you kindly furnish us with information showing the character of the naphtha or distillate produced in the Bay City field, Matagorda County, Texas?—S. M.

There is a so-called "distillate" produced in the Bay City field which has these distillation characteristics:

BAY CITY LIGHT OIL

Gravity °A.P.I.	50.5
Distillation:	°F.
Initial	112
Per cent off	
10	196
20	233
50	349
70	453
90	534
Max.	603
	Per cent
Recovery	96.0
158°F.	6.5
221	20.0
284	37.5

This oil is reported to be produced from a depth of 9,310 feet.

The practice of designating a petroleum of this type as distillate or naphtha is confusing, both are misnomers, because these words have long been used in the refining branch of the industry with a particular meaning, a distillate being any unrefined product obtained as a condensate. Naphtha is a distillate having gravities and boiling points between the gasoline and kerosene fractions. It has been defined by the American Society for Testing Materials as the petroleum product having a minimum of 10 per cent distilling at 347°F. and a minimum of 95 per cent distilling off at 464°F.

Mid-Continent Refinery Crude Runs Will Be Reduced During February

Estimated daily refinery crude runs in the Mid-Continent area will be down during February, this reduction being due principally to plants being shut down, and not to a general reduction of individual plant operations. Total crude runs for the month are reported as 494,910 bbls., compared with 507,985 bbls. one year ago, and compared with 503,405 bbls. in January of this year.

Oklahoma

Oklahoma refinery runs remain practically unchanged. Daily crude runs to stills for February total 143,380 bbls., compared with 139,650 bbls. for January. The Barnsdall Oil Co.'s refinery at Barnsdall is again operating with a daily crude run of 2,800 bbls. The Wilcox refinery at Bristow, now under lease to W. M. Fraser, formerly superintendent of the plant, has increased its daily throughput from 3,300 bbls. in January to 4,500 bbls. in February. Other plants increasing their daily runs are the Cities Service plant at Ponca City, from 8,500 bbls. last month to 9,300 bbls. in February; Phillips Petroleum Co., Okmulgee, from 5,350 bbls. to 5,830 bbls.; and the Rock Island Refining Co. at Beckett, from 4,700 bbls. to 5,000 bbls. Tide Water Associated Oil Co.'s plant at Drumright has reduced its daily crude runs 1,000 bbls. during February.

Kansas

Estimated daily crude runs for Kansas are reported as 121,825 bbls., compared with 123,200 bbls. in January. Plants reducing runs to stills in February are the Globe Oil & Refining Co., McPherson, from 11,000 bbls. to 10,500 bbls.; Phillips Petroleum Co., Kansas City, from 16,450 bbls. to 15,500 bbls.; Standard Oil Co.'s plant at Neodesha, from 7,400 bbls. to 7,200 bbls.; and the United Refining Co., Russell, from 800 bbls. to 700 bbls. The Shallow Water Refining Co. at Scott City has increased its daily crude runs from 1,100 bbls. last month to 1,500 bbls. in February. Barnsdall, at Wichita, has also increased its runs from 5,000 bbls. to 5,250 bbls. in February.

West Texas and Panhandle

Total estimated daily refinery runs in the West Texas and Panhandle areas show a slight increase over last month. Crude runs to stills have been increased at the larger plants, making a daily gain of 4,165 bbls. in February. Refineries increasing their crude runs include the Gulf Oil Corp. at Sweetwater, showing an increase of 1,300 bbls. daily, and the Phillips Petroleum Co. at Borger, showing an increase of 2,330 bbls. daily.

East Texas

East Texas crude runs total 40,775 bbls. in February, a decrease of 2,550 bbls. compared with January. The Cascade Refining Co.'s plant at Reed Switch, which has been shut down for several months, has been dismantled. The Clay Refining Co. at Arp, which processed 2,000 bbls. daily in January, has been shut down. Sinclair Refining Co. closed its plant at Camp Switch the latter part of January and will be shut down indefinitely. This plant had a daily throughput of 4,000 bbls. during January. The Utah Refining Co. at Kilgore will be shut down during February. The McMurrey plant at Tyler, which reopened some time ago as the Tyler Oil & Refining Co., is again operating as the McMurrey Refining Co. and is running 3,600 bbls. daily to stills. The East Texas Refining Co. at Longview is again in operation with a daily crude run of 3,500 bbls.

North Louisiana and Arkansas

Estimated daily crude runs in both Arkansas and Louisiana are down considerably compared with last month. North Louisiana reports a total of 36,450 bbls. in February, a decrease of 9,250 bbls. The Atlas refinery in Shreveport is shut down. No plans for reopening have yet been announced, but it is expected that the plant may be running again in March. All refineries in Arkansas show a reduction over last month with the exception of the Berry Asphalt Co. at Waterloo which has increased its daily crude runs from 700 bbls. in January to 1,200 in February. Total crude runs for the month are 23,200 bbls., a decrease of 2,330 bbls.

North Central Texas

North Central Texas refineries have reduced their runs slightly, the total for February being 35,215 bbls., compared with 35,600 bbls. in January. The Bryson Refining Co., Inc., Bryson, is now operating with a daily run of 200 bbls. The Waggoner Refining Co. at Vernon is now operating as the W. T. Waggoner Estate. Crude runs at this plant have been reduced from 4,000 bbls. in January to 3,330 bbls. in February.

Southwest Texas

Total daily crude runs in Southwest Texas are reported as 15,000 bbls., a reduction of 500 bbls. compared with last month. This reduction is the reflection of lowered crude runs generally throughout the entire Southwest Texas area.

Mid-Continent Crude Runs

Average Daily (Barrels)

(Advance estimate compiled by The Oil and Gas Journal)

	1937	1938	1939
January	531,535	529,710	503,405
February	541,790	507,985	494,910
March	533,875	491,935	.....
April	558,385	532,120	.....
May	572,855	527,315	.....
June	593,625	540,005	.....
July	605,640	557,520	.....
August	624,475	554,810	.....
September	625,485	555,695	.....
October	619,210	531,325	.....
November	592,170	524,035	.....
December	544,040	503,530	.....

Operations by Refinery Districts

Daily crude runs

	Feb.	Jan.	Decr.
Arkansas	23,200	25,530	2,330
East Texas	40,775	43,325	2,550
Kansas	121,825	123,200	1,375
N. Central Texas	35,215	35,600	385
North Louisiana	36,450	45,700	9,250
Oklahoma	143,380	139,650	*3,730
Southwest Texas	15,000	15,500	500
W. Texas Panhandle	79,065	74,900	*4,165
Total	494,910	503,405	8,495

*Increase.

Estimated Daily Average Mid-Continent Refinery Crude Runs for February

OKLAHOMA

Company and location—	Daily capacity	Av. dly. runs Feb.	Av. dly. runs Jan.
Anderson-Prichard Ref. Corp., Cyril	7,500	6,000	6,500
Barnsdall Ref. Corp., Barnsdall	5,000	2,800	(*)
Bell Oil & Gas Co., Grandfield	5,000	3,000	3,500
Black Gold Ref. Co., Oklahoma City	2,500	(*)	(*)
Champlin Ref. Co., Enid	16,000	15,000	15,000
Cities Service Oil Co., Okmulgee	4,000	(*)	(*)
Cities Service Oil Co., Ponca City	12,000	9,300	8,500
Continental Oil Co., Ponca City	28,000	18,500	18,500
Cosco Oil Co., Wynnewood	2,500	(*)	(*)
Cushing Ref. & Gasoline Co., Blackwell	1,700	(*)	(*)
Cushing Ref. & Gasoline Co., Cushing	4,200	4,000	4,000
Deep Rock Oil Corp., Cushing	10,000	9,000	9,000
Eason Oil Co., Enid	3,000	(*)	(*)
Globe Oil & Ref. Co., Blackwell	8,000	(*)	(*)
Johnson Oil Ref. Co., Cleveland	6,000	5,000	5,000
Knox Ref. Co., Covington	300	100	100
Mid-Continent Pet. Corp., West Tulsa	35,000	20,000	20,000
Ohio Oil Co., Bristow	5,000	2,500	2,500
Omar Ref. Co., Garber	5,000	2,500	2,500
Phillips Pet. Co., Okmulgee	6,500	5,830	5,350
Peppers Gasoline Co., Oklahoma City	500	350	400
Pure Oil Co., Muskogee	9,000	(*)	(*)
Rock Island Ref. Co., Beckett	6,500	5,000	4,700
Sinclair Ref. Co., Sand Springs	6,000	4,000	4,000
Sun Oil Co., Yale	5,000	2,000	2,000
Sunray Oil Co., Allen	7,000	4,000	4,300
Texas Co., West Tulsa	16,000	10,000	10,000
Tide Water Oil Co., Drumright	12,000	10,000	11,000
Wilcox Ref. Division, Bristow	6,000	4,500	3,300
Total	235,700	143,380	139,650

*Shut down.

KANSAS

Company and location—	Daily capacity	Av. dly. runs Feb.	Av. dly. runs Jan.
Barnsdall Ref. Co., Wichita	5,000	5,250	5,000
Bay Pet. Co., McPherson	4,000	3,500	3,750
Chanute Ref. Co., Chanute	1,000	700	800
Chase Ref. Co., Chase	800	(*)	(*)
Derby Oil Co., Wichita	8,000	5,500	5,500
El Dorado Ref. Co., Eldorado	5,000	3,500	3,500
Falcon Ref. Co., Inc., Great Bend	1,000	475	450
Globe Oil & Ref. Co., McPherson	13,000	10,500	11,000
Kanotex Ref. Co., Arkansas City	12,000	5,500	5,500
National Ref. Co., Coffeyville	8,000	5,000	5,000
Pet. Products Co., Chanute	1,250	1,000	1,000
Phillips Pet. Co., Kansas City	23,000	15,500	16,450
Roper Pet. Co., Parsons	750	500	450
Shallow Water Ref. Co., Scott City	2,500	1,500	1,100
Sinclair Ref. Co., Coffeyville	12,000	8,000	8,000
Sinclair Ref. Co., Argentine	11,000	8,000	8,000
Skelly Oil Co., Eldorado	23,000	20,000	20,000
Socony-Vacuum Oil Co., Inc., Augusta	20,000	16,500	16,500
Standard Oil Co. (Indiana), Neodesha	7,500	7,200	7,400
United Ref. Co., Russell	1,200	700	800
Vickers Pet. Co., Potwin	4,000	3,000	3,000
Total	164,640	121,825	123,200

*Shut down.

EAST TEXAS

Company and location—	Daily capacity	Av. dly. runs Feb.	Av. dly. runs Jan.
Beacon Oil & Ref. Co., Henderson	4,500	(*)	(*)
Clay Ref. Co., Arp	3,500	(*)	2,000
Danciger Refs., Inc., Longview	6,000	(*)	(*)
East Texas Ref. Co., Longview	6,000	3,500	(*)
Hurricane Pet. Corp., Overton	5,000	2,875	2,875
Hurricane Pet. Corp., Arp	3,300	1,900	1,900

Company and location—	Daily capacity	Av. dly. runs Feb.	Jan.
Lacy Ref. Co., Kilgore	3,000	2,400	2,200
Magnolia Pet. Co., Corsicana	5,000	4,500	4,600
McMurrey Ref. Co., Tyler	10,000	3,600	4,000
Paluxy Asphalt Co., Talco	5,000	2,500	3,000
Premier Oil Ref. of Texas, Gregglown	4,000	3,000	3,000
Sinclair Ref. Co., Camp Switch	4,000	(*)	1,000
Solvex Refs., Inc., Gladewater	4,500	(*)	(*)
Southport Pet. Co., Kilgore	4,000	3,000	3,000
Talco Asphalt & Ref. Co., Mt. Pleasant	7,500	4,500	5,000
Texas Co., Dallas	16,000	8,000	8,500
Texas Oil Products Co., Gladewater	3,000	1,000	1,250
Tower Ref. Co., Overton	3,500	(*)	(*)
Utah Ref. Co., Kilgore	2,000	(*)	1,000
Total	105,300	40,775	43,325

*Shut down.

WEST TEXAS AND PANHANDLE

Aero Gas & Ref. Co., Fort Stockton	350	100	100
Coltex Ref. Co., Colorado	12,500	7,500	8,000
Concho Ref. Co., San Angelo	250	(*)	(*)
Cosden Oil Co., Big Spring	12,500	10,460	10,500
Danciger Refs., Inc., Pampa	6,500	4,600	4,600
Danube Oil Corp., Borger	1,200	750	800
Farmers Ref., Lubbock	500	200	200
Gulf Oil Corp., Sweetwater	7,000	6,800	5,500
Howard County Ref. Co., Big Spring	2,000	600	700
Moutray Oil Co., Hawley	1,400	700	600
Onyx Ref. Corp., Hawley	3,000	1,400	1,600
Panhandle Ref. Co., Kings Mill	2,500	1,200	1,250
Payward Ref. Co., Shamrock	600	500	600
Phillips Pet. Co., Borger	35,000	26,330	24,000
Post Refining Co., Rotan	800	575	500
Shamrock Oil & Gas Corp., Sunray	3,000	2,000	2,000
Stamford Ref. Co., Stamford	450	450	400
Shamrock Oil & Gas Corp., Lefors	1,600	1,000	1,200
Standard Oil Co. of Texas, El Paso	14,000	7,400	7,400
Star Light Ref. Co., Ballinger	1,000	150	150
Texas Co., El Paso	2,000	1,200	1,300
Texas Co., Amarillo	6,000	2,500	3,000
Western Ref. Co., Fort Stockton	1,000	650	700
Wickett Pet. Co., Wickett	3,500	2,000	2,500
Total	122,050	79,065	74,900

*Shut down.

ARKANSAS

Berry Asphalt Co., Waterloo	2,000	1,200	700
Henry H. Cross, Smackover	6,000	2,500	3,000
Lion Oil Ref. Co., El Dorado	17,000	12,000	13,000
Macmillan Pet. Corp., Norphlet	2,500	2,000	2,200
Root Ref. Co., El Dorado	10,000	5,000	6,130
Stephens Ref. Co., Stephens	700	500	500
Total	38,200	23,200	25,530

NORTH LOUISIANA

Arkansas Fuel Oil Co., Bossier City	25,000	20,000	20,000
Atlas Pipe Line Co., Shreveport	12,500	(*)	9,000
Bayou State Oil Corp., Hosston	750	500	400
East Texas Ref. Co., Sandra	7,000	1,000	1,000
Lake-Price Refineries, Inc.	800	450	500
Premier Oil Ref. Co. of Texas, Cotton Valley	3,000	2,500	2,800
Rodessa Oil & Ref. Corp., Cedar Grove	12,000	10,000	10,000
Stanolind Oil & Ref. Co., Superior	5,000	2,000	2,000
Total	62,250	36,450	45,700

NORTH CENTRAL TEXAS

Bryson Pipe Line & Ref. Co., Bryson	2,000	1,000	1,200
Bryson Ref. Co., Inc., Bryson	350	200	200
Baird Ref. Co., Baird	1,500	1,200	1,200
Coleman Ref. Co., Coleman	1,000	400	450
Continental Oil Co., Wichita Falls	6,000	4,175	4,350
Denver Prod. & Ref. Co., Gainesville	3,000	500	800
Exchange Pet. Corp., Albany	800	(*)	(*)
Falls Ref. Co., Wichita Falls	2,500	450	500
Gratex Ref. & Fuel Oil Co., Graham	300	260	270
Gulf Oil Corp., Fort Worth	8,000	5,600	5,600
Hightower Oil & Ref. Corp., Brownwood	750	200	200
Jacksboro Ref. Co., Jacksboro	400	200	175
La Salle Pet. Co., Burkburnett	3,000	1,000	1,000
Mankins Ref. Co., Mankins	1,500	1,000	1,000
Magnolia Pet. Co., Fort Worth	7,500	6,000	6,000
North Texas Ref. Co., Gainesville	600	250	300
Ohio Oil Co., Fort Worth	5,000	3,900	3,900
Olney Oil & Ref. Co., North Olney	3,500	1,000	1,000
Panhandle Ref. Co., Wichita Falls	4,200	2,500	2,200
Panhandle Ref. Co., Lueders	1,500	800	850
Taylor Ref. Co., Taylor	1,000	700	750
Texas Pacific Coal & Oil Co., Caddo	800	600	600
Tucker Oil Co., Burkburnett	250	150	155
Tydal Ref. Co., Gainesville	1,850	(*)	(*)
W. T. Waggoner Est., Vernon	4,000	3,330	4,000
Total	63,800	35,215	35,600

*Shut down.

SOUTHWEST TEXAS

Border Oil & Ref. Co., Sullivan City	1,000	200	200
Carle Ref. Co., Inc., San Antonio	1,000	(*)	(*)
Eggleston Oil Producers Co., Three Rivers	1,000	1,000	1,000
Humble Oil & Ref. Co., San Antonio	5,000	3,500	3,500
Ina Oil & Ref. Co., Hondo	400	(*)	(*)
Magnolia Pet. Co., Luling	8,000	4,000	4,000
Majestic Ref. Co., Dale	500	350	400
Misko Refineries, Inc., Mirando City	4,500	(*)	(*)
Pettus Oil & Ref. Co., Pettus	1,000	800	900
Phoenix Ref. Co., San Aontonio	1,200	650	700
Phoenix Ref. Co., Pettus	900	500	500
Pioneer Oil & Ref. Co., Somerset	2,000	1,000	1,200
Rado Ref. & Prod. Co., McAllen	800	500	500
Texas Co., San Antonio	5,000	2,500	2,600
Total	32,300	15,000	15,500

*Shut down.

PRESSURE

(Continued from Page 46)

At reservoir conditions the 34,719,000 cu. ft. of gas injected during the last half of October will occupy 316,300 cu. ft. when the gas is considered to be coming from the gas cap and 316,000 cu. ft. when the gas is considered to be coming from gas in solution. In the first case, net withdrawal for October was 1,389,139 cu. ft. at reservoir conditions while the accumulated withdrawal is 43,453,437 cu. ft. at reservoir conditions. In the second case the October withdrawal was 1,198,650 cu. ft. and the total accumulated withdrawals was 36,080,440 cu. ft. at reservoir conditions.

Gas in solution in the oil in formation at 1,566 pounds pressure as obtainable from bottom-hole samples is 588 cu. ft. per barrel. With an October producing gas-oil ratio of 732 cu. ft. per barrel the efficiency of the lifting method is $\frac{588 \times 100}{732} =$ 80.4 per cent. Only 19.6 per cent of the gas produced with the oil comes from the gas cap and with the repressure system in operation more gas will be returned to the formation than is being taken from the gas cap. While some of the gas will return to solution on injection, much of it will go into the cap with a consequent maintenance of the pressure in the formation. The water encroachment will be controlled and by keeping close check on it, practically all of the oil in the reservoir may be recovered.

The ratio of solution gas to produced gas during the life of the field has been as follows:

	Per cent
October, 1937	71.0
November	70.3
December	69.9
January, 1938	69.7
February	69.6
March	76.1
April	75.5
May	76.4
June	75.5
July	73.9
August	81.2
September	84.3
October	80.4
November	81.2

Due to the increase in the technical work, gasoline extraction, and repressuring there was practically no reduction in the number of men employed in the field as a result of the unitization.

Surface equipment in the Billings-Wilcox pool was selected and erected with great care and is being maintained in accordance with the best practices. Pumping derricks have been erected over the wells and all of these have concrete floors and circular covers for the cellars.

On wells requiring treatment of the crude to eliminate the water produced, a special 30-inch by 10-foot automatic heater is installed on a concrete base. These heaters are designed to handle 4,000 bbls. of crude daily, the heat being automatically increased as the production increases. On one tank battery installation, the engineers elevated and modified a 210-bbl. welded tank for treating.

The increase in the products from the field and the conservation of the natural resources to be gained from the plan being followed in the Billings-Wilcox pool are already evident. Estimates of per cent total recovery of reserves in the pool are constantly increasing. In its present condition the field is a model of engineering skill and results to date strongly indicate that the efforts to maintain pressure and forbearance from reaping an immediate harvest will be rewarded by an unusually large total recovery.

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BORING JARECKI VALVE BONNETS FOR STEMS

FIELD OPERATIONS

Summarizing the Week's Developments

KANSAS—A new pool was opened near the town of Boyd in west central Barton County, 6 miles southwest of the Hoisington pool, nearest production. A wildcat in Section 7-21-11w, Stafford County, gave promise of opening a pool when saturation was cored in Arbuckle lime. The Cairo gas pool in Pratt County was extended one-half mile to the southeast.

OKLAHOMA—Three new wells found Wilcox sand production in the Ramsey pool, Payne County, making a total of 20 producers in the field. One of the new wells extended production east of the community block on which the other 19 producers are located. Two of the new wells made potentials of 8,699 bbls. and 6,795 bbls. daily, and the third one continued to test. A wildcat west of Cushing, Payne County, opened a Skinner sand gas area. A wildcat on the north edge of the St. Louis district, Pottawatomie County, was dry in Wilcox sand but was showing oil in Hunton and Misener formations.

TEXAS—The Slaughter pool in Hockley County, West Texas, is promised a mile extension. Wildcatting in the Permian basin is on the increase. A shallow pay was opened in the Holliday pool in Wichita County. A 4,000-foot test is to be drilled in Hardeman County by eastern operators. A deep Glen Rose test in the Cayuga field, Anderson County, is showing distillate production. George Strake will drill a deep Trinity test in Wood County, eastern Texas. Four wildcats in Jim Wells, Refugio and Brooks counties, now being tested, were the most important operations in that area. A new pool, or the extension of the Tomoconnor pool in Refugio County, appears imminent and the Riverside pool in Nueces County seems assured of an extension. In the Gulf Coast district the Louisiana side continues the most interesting. New oil horizons were opened in the Leesville and West Hackberry fields and more wells are to start on the Sparta-Wilcox trend.

LA-ARK-TEX—Two wells were added to the Shreveport pool. A shallow Pine Island pay is attracting new work in that old area. The second well in the shallow pay started at 153 bbls. per hour through a three-quarters inch choke.

NEW MEXICO—A natural producer in the South Eunice field, Lea County, flowed 1,440 bbls. of oil daily, and another well in the same area flowed 102 bbls. of oil in two hours. The third oil well in the new Lovington pool, Lea County, was completed, flowing 332 bbls. daily and extending the area about one-half mile eastward.

ILLINOIS—Another rise in production in the Central Basin fields gives the state a new peak of 149,867 bbls. per day notwithstanding the recent decline in completed work because of unfavorable weather conditions. Failure of two tests to find Devonian lime production near Sandoval narrows that deep pay to a small area.

MICHIGAN—Twenty oil wells were completed in the past week, a new seven-day record for this year. Nine of the new wells yielding 3,265 bbls. per day were in the Bloomingdale field. Five Freeman-Redding wells averaged 1,000 bbls. per well.

Completions in All Fields

(Week Ending February 11, 1939)

	Oil	Gas	Dry	Total	1939 total comp. to date	1938 total comp. to date
N. Y., Pa., and W. Va.	54	8	4	66	398	686
Ohio	0	4	10	14	122	128
Indiana	3	4	4	11	21	12
Kentucky	7	3	8	18	78	96
Illinois	51	1	9	61	447	67
Michigan	20	1	10	31	124	86
Kansas	16	1	8	25	134	254
Oklahoma	18	3	14	35	204	223
Texas:						
North Central Texas	20	0	29	49	244	306
West Texas	28	0	2	30	220	308
Texas Panhandle	6	0	0	6	48	109
East Texas	13	0	1	14	121	323
East Central Texas	2	1	0	3	30	53
East Texas Border	1	0	0	1	12	20
Gulf Coast Texas	16	1	5	22	158	148
Southwest Texas	36	1	11	48	269	255
Total Texas	122	3	48	173	1,102	1,522
North Louisiana	7	0	1	8	56	78
Gulf Coast Louisiana	6	0	5	11	88	70
Total Louisiana	13	0	6	19	144	148
Arkansas	1	0	0	1	35	28
Montana	2	0	0	2	17	6
Wyoming	1	0	0	1	9	20
Colorado	0	0	0	0	1	0
New Mexico	10	0	2	12	82	79
Utah	0	0	0	0	0	0
California	13	0	2	15	107	193
Total United States	331	28	125	484	3,025	3,548
Total previous week	299	35	98	432		
Week ending Feb. 12, 1938	344	57	98	499		

Outstanding Fields--Highlights

(Week Ending February 11, 1939)

FIELD—	Rigs up	Wells drlg.	Weekly oil completions	Initial prod.	Total No. oil wells	Daily av. prod.
TEXAS						
K.M.A.	37	45	6	3,304	923	21,010
Wasson-Bennett	7	29	6	6,070	212	11,497
Ector County	8	60	9	11,346	1,563	43,248
Winkler County	2	15	0	0	1,758	36,447
Howard-Glasscock	3	18	0	0	1,042	15,697
East Texas	7	33	13	646	25,970	372,750
OKLAHOMA						
St. Louis	7	30	3	889	775	26,200
Oklahoma City	0	4	1	75	1,037	100,950
KANSAS						
Barton County	2	16	1	203	403	9,815
Stafford County	5	16	6	1,497	243	4,780
Rice County	4	14	0	0	1,269	24,620
Russell County	3	21	3	1,915	1,193	20,875
NEW MEXICO						
Lea County	6	59	9	1,561	2,027	95,100
LA-ARK-TEX						
Rodessa, La-Ark-Tex	1	5	1	230	1,065	64,085
Cotton Valley, La. (deep)	3	12	1	405	114	11,170
Schuler, Ark.	1	3	1	300	167	18,860
Jennings, La.	1	6	0	0	137	27,139
MICHIGAN						
Freeman-Redding	4	24	5	5,100	57	9,360
ILLINOIS						
Central Illinois	46	372	51	10,256	2,421	141,980
CALIFORNIA						
Wilmington	5	10	3	1,763	601	82,975
KENTUCKY						
Birk City	5	18	4	675	119	4,406

Illinois and Kentucky

By STAFF CORRESPONDENT

51 Oil Wells Completed in the Basin Fields of Illinois

MATTOON, Ill., Feb. 13.—Sixty wells were completed in Illinois in the past week in review, of which 51 were oil wells with a combined initial production of 10,256 bbls. There were nine dry holes and one shallow gas well.

Marion County led in completions with 24 oil wells, and 2,872 bbls. initial production, and two dry holes. The initial production in many wells represented only a short-time flow. Fourteen oil wells completed in Fayette County produced 4,882 bbls. initially. No dry holes were reported. A very shallow gas well will supply fuel for leases. A 200-bbl. well was completed in Richland County. Ten new oil wells in Clay started off with a combined 1,917 bbls. per day. Wayne County had a 360-bbl. well and Washington County shows a delayed completion in the Blankenship discovery well which started off at 25 bbls. per day on the pump. Dry holes were reported in Tazewell, Lawrence, Clinton, Sangamon, Jefferson, Wayne and Montgomery counties in addition to the two in Marion County.

A report made to the Independent Petroleum Association of America by its general counsel, Russell B. Brown, says the oil men of Illinois are making a very serious effort to work out their problems in a legislative way. Groups from the different sections of the state, vitally concerned in the production of oil in Illinois, are trying to come to an understanding of what is the best type of legislation.

The Texas Co., largest operator in the Salem field in Marion County, has purchased from Kingwood Oil Co. and Wiser Oil Co. the 70-acre Maxwell lease in the Salem pool. The property is known as the Maxwell C, in the SW SW SW Section 29-2n-2e; Maxwell B, NE SE Section 30-2n-2e, and Maxwell A, N half SE NE Section 31-2n-2e. The three leases ran 27,189 bbls. of crude during December, the latest pipe line figures available.

The Manahan Oil Co. of Tulsa is one of the latest of Mid-Continent oil companies to enter the Illinois fields. The company recently purchased the C. C. Harwell Fitch lease in Section 3-1n-8e, in Clay County, and is drilling two wells.

Only 42 new operations were reported during the week, or 18 fewer than the number of completions. Weather conditions were responsible for the delay in starting new work in many cases.

Illinois Fields

HIGHLIGHTS OF THE WEEK: Notwithstanding a falling off in completed oil wells as compared with results in the early winter time, production continues to increase in the Basin fields and in the past week reached another high. The old fields in the southeastern part of the state are being very considerably curtailed. The failure of the Menhall test in Section 8-2n-1e to find saturation in the Niagara lime puts a damper on the chances of opening a large Devonian lime field in Marion County. However, the well was not yet a completion.

Daily production of new pools, 141,980 bbls.; old pools, 7,887 bbls.; total, 149,867 bbls.

Completed oil wells, 51; operations including locations, rigs and wells drilling, 441.

Wells Completed

The completions reported during the past week were as follows, the initial production representing 24 hours unless otherwise stated:

In Tazewell County, Hopedale Oil & Gas Co. No. 1 Titweiler, C NW SW SW Section 2-22n-3w, was reported dry at 2,310 feet. St. Peter sand was topped at 2,139 feet.

In Fayette County, Louden field, Carter Oil Co. No. 4-A Watson, SE SE SW Section 33-8n-3e, Weiler sand at 1,470-1,532 feet and Stray sand at 1,554-76 feet, shot with 40 quarts, swabbed 184 bbls. of oil and some gas. Carter No. 3 H. O. Lewis, SE SE NW Section 27-8n-3e, Bethel sand at 1,573-88 feet, shot with 20 quarts, swabbed 176 bbls. of oil. and some gas. Carter No. 1 A. Dunaway, NW NE SE Section 29-8n-3e, Bethel at 1,505-41 feet, shot with 55 quarts, flowed 600 bbls. of oil and 90,000 cu. ft. of gas. Carter No. 3 S. R. Myers, SW SW SE Section 29-8n-3e, Bethel sand at 1,542-73 feet, shot, shot with 40 quarts, flowed 636 bbls. of oil and 110,000 cu. ft. of gas. Carter No. 1 E. Sherman, Weiler sand at 1,486-1,507 feet, shot with 40 quarts, pumped 48 bbls. of oil and 10,000 cu. ft. of gas. Carter No. 3 Leroy Cummings, SE NW SW Section 32-8n-3e, Bethel sand at 1,553-86 feet, shot with 50 quarts, flowed 442 bbls. of oil and 60,000 cu. ft. of gas. Carter No. 2 W. Ireland, SW NW NE Section 32-8n-3e, Bethel sand at 1,538-82 feet, shot with 100 quarts, flowed 984 bbls. Carter No. 3 W. Ireland, NW SW NE Section 32-8n-3e, Bethel sand at 1,543-86 feet, shot with 90 quarts, flowed 444 bbls.

In the southern end of the Louden field, Carter Oil Co. No. 2 H. Durbin, SE SW SW Section 4-7n-3e, Stray sand at 1,563-80 feet, shot with 20 quarts, swabbed 172 bbls. Carter No. 1 L. Deal, SE SE NW Section 6-7n-3e, Weiler sand at 1,407-1,502 feet, shot with 60 quarts, swabbed 400 bbls. Carter No. 1 G. Pasley, NW SE SW Section 6-7n-3e, Weiler sand at 1,435-75 feet, shot with 60 quarts, swabbed 448 bbls. Carter No. 4 Mary Welker, NW NE NW Section 8-7n-3e, Bethel sand at 1,554-71 feet, shot with 20 quarts, pumped 214 bbls. Minerva Oil Co. No. 3 Morris, NW SW NW Section 21-7n-3e, Weiler sand at 1,542-66 feet, pumped 75 bbls. Texas Co. No. 2 J. Swarm, SE cor. NE NW SW Section 30-6n-3e, Weiler sand at 1,569-90 feet, pumped 59 bbls. in nine hours, estimated as a 133-bbl. well.

In Richland County, Pyramid Petroleum Co. No. 1 Houser, C S half SE SW Section 15-4n-10e, Olney field, pay at 2,997-3,001 feet and 3,006-08 feet, acidized with 5,000 gallons, was finally completed as a 200-bbl. well on the pump. On January 10-12 (three days), it flowed 663 bbls. and then quit.

In Lawrence County, Herbst and others No. 1 Lemmons, C N half SW NW Section 7-4n-10w of second principal meridian, hole full of water and abandoned at 1,178 feet. It penetrated Bridgeport sand at 847-60 feet and Buchanan sand at 1,094-1,125 feet.

In Clay County, Pure Oil Co. No. 12 C. Wilkin, C N half SW SW Section 28-3n-8e, pays at intervals from 2,962 to 3,037 feet, acidized with 5,000 gallons, pumped 263 bbls.

In Clinton County, Adams Oil & Gas Co. No. 1 Hoffman Heirs, NW SE SW Section 26-2n-1w, dry and abandoned at 1,437 feet.

Clay County

In Clay County, Pure Oil Co. No. 5 Fearn, C E half NW SE Section 22-1n-7e, Fredonia lime topped at 3,119 feet, pays at intervals from 3,120 to 3,143 feet, casing perforated with 108 shots, flowed 391 bbls. Pure No. 1 Joe Z. Croft, C W half NW NE Section 30-2n-8e, Fredonia topped at 3,014 feet, pay at 3,032-68 feet and 3,085-90 feet, acidized with 5,000 gallons, flowed 276 bbls. Pure No. 2 C. Hosselton A, C E half SE NW Section 21-2n-8e, Fredonia top at 3,005 feet, pay at 3,013-25 feet, and showings at intervals from 3,031-3,106 feet, total depth 3,115 feet, plugged back to 3,095 feet and acidized with 1,000 and then with 5,000 gallons, pumped 90 bbls. Pure No. 4 G.L. Travis, C W half SW NE Section 4-2n-8e, Fredonia at 2,950 feet, pays at intervals, 2,963 to 3,003 feet, flowed 232 bbls. Pure No. 2 Phillip Edens, C E half SW NE Section 5-2n-8e, Fredonia top at 2,975 feet, showings and pays from 2,977 to 3,070 feet, acidized with 5,000 gallons, flowed 360 bbls. Pure No. 5 Sol Smith A, C E half NW SE Section 9-2n-8e, Fredonia pay at 2,977-3,067 feet in streaks, pumped 41 bbls. in 15 hours. Pure No. 3 J. T. McCollister A, C W half NE NW Section 15-2n-8e, pays at 3,016 to 3,055 feet, acidized with 420 gallons, 1,750 gallons, and 5,000 gallons, pumped 71 bbls. Pure Oil Co. No. 10 C. B. Clay, C E half SE NW Section 27-1n-7e, pays at 3,118-46 feet, at intervals, acidized with 5,000 gallons, pumped 158 bbls. Pure No. 2 J. A. Johnson A, C W half NE SW Section 27-1n-7e, Roseclaire at 3,101 feet, pays at 3,133-47 feet, casing perforated, pumped 35 bbls. of oil and 27 bbls. of water.

In Sangamon County, Morris and others No. 1 Ray King, NW NE SE Section 24-15n-7w, Devonian lime top at 1,335 feet, Trenton lime at 1,806 feet, total depth 2,257 feet, in St. Peter sand, dry and abandoned.

In Jefferson County, Kingwood Oil Co. No. 1 Frost, NW SW NW Section 27-2s-1e, was dry and abandoned at 2,288 feet in St. Louis limestone topped at 2,283 feet. Heenan & Coe No. 1 Kobezeski, NW cor. Section 27-2s-1e, McClosky at 2,248-55 feet, 800 feet of fluid rose in the hole, 100 feet of which was oil and 700 feet water, total depth 2,276 feet, temporarily abandoned.

In Wayne County, Rockhill Oil Co. No. 4 Twist A, SE SW SE Section 32-2s-7e, Ste. Genevieve lime at 3,260 feet, pay at 3,345-56 feet, flowed 15 bbls. per hour.

In Washington County, G. H. Blankenship completed his discovery well No. 1 J. L. Dennis, NE SW NE Section 14-3s-3w. It is a 25-bbl. pumper from Benoist sand at 1,228-39 feet. The well came in in December.

In Wayne County, Doctor More No. 1 More, SE NE NW Section 16-3s-5e, which was dry and abandoned at 3,402 feet, had Benoist sand at 3,015 feet, Ste. Genevieve lime at 3,190 feet, and Fredonia lime top at 3,250 feet.

Marion County

In Marion County, Centralia area, F. D. Strickler No. 1 Holsapple, SE cor. NE SE Section 25-2n-1e, was dry and abandoned at 2,168 feet, Benoist sand was topped at 2,004 feet and Fredonia lime at 2,130 feet. In the Salem area, Magnolia Petroleum Co. No. 24 W. O. Chitwood, NW NW SE Section 16-2n-2e, Bethel sand at 1,797-1,835 feet, swabbed 250 bbls. Potter and others No. 1 I.S.R.R., NW NE SE Section 16-2n-2e. Benoist at 1,849-86 feet, pumped 226 bbls. Texas Co. No. 2 M. Johnson, NW SE NE Section 16-2n-2e, Benoist at 1,848-90 feet, pumped 29 bbls. in three hours, rated as a 200-bbl. well. Texas No. 4 F. Shanafelt, SW NW NE Section 16-2n-2e, Benoist at 1,847-64 feet, pumped 24 bbls. in three hours, rated a 168-bbl. well. Magnolia No. 18 D. A. Shanafelt, NE NE NW Section 21-2n-2e, Bethel at 1,820-61 feet, shot with 40 quarts, swabbed 200 bbls. Texas No. 1 C. Kleinschmidt, NW NW NE Section 28-2n-2e, Benoist at 1,827-67 feet, pumped 40 bbls. in three hours, rated a 280-bbl. well. Texas No. 4 C. Kleinschmidt, SW SW NE Section 28-

2n-2e, Benoist at 1,821-58 feet, pumped 36 bbls., rated a 252-bbl. well. Texas Co. No. 5 F. Lee, SE SE SW Section 28-2n-2e, Bethel at 1,761-1,805 feet, flowed 24 bbls. in three hours, rated at 148 bbls. per day. Texas No. 1 T. Stroup, SW SE SW Section 30-2n-2e, Benoist at 1,851-75 feet, pumped 15 bbls. in three hours, rated at 105 bbls. a day. Texas No. 1 Winegarner, NE SW SW Section 34-2n-2e, McClosky lime at 2,111-17 feet, acidized with 1,000 gallons, pumped 42 bbls. Kingwood Oil Co. abandoned the location for No. 2 Maxwell B, NE NE SE Section 30-2n-2e, and Texas Co. abandoned locations for No. 11 Frederick A, NW SW SW Section 29, and No. 10 on the same lease, NE SW SW Section 29-2n-2e, and No. 1 J. Shanafelt, SW SW NW Section 16-2n-2e.

In the south end of the Salem field, Chicago Syndicate No. 1 Williams, NW NE SE Section 36-1n-2e, had McClosky pay at 2,438-48 feet, but found only water. It was plugged back to 2,409 feet and Roseclaire lime acidized with 1,000 gallons with no results. The test was reported abandoned. Texas Co. No. 3 C. E. Richardson, NE NE SE Section 6-1n-2e, had Benoist at 1,724-42 feet, flowed 48 bbls. in three hours, rated at 336 bbls. per day. Texas Co. No. 4 W. Carr, C S half SW NW Section 8-1n-2e, Benoist at 1,754 feet, McClosky pay at 1,981-93 feet, flowed 80 bbls. in three hours, rated at 560 bbls. per day. C. Pierson No. 1 Williams, SW NE SW Section 9-1n-2e, Benoist at 1,845-60 feet, pumped 150 bbls. Texas No. 5 M. Bryant, NE NW SW Section 9-1n-2e, Benoist at 1,869-91 feet, pumped 26 bbls. in three hours, rated as a 182-bbl. well. Texas Co. No. 12 City of Centralia land, SW NW NW Section 9-1n-2e, Benoist at 1,818-58 feet, pumped 30 bbls. in three hours, rated at 210 bbls. per day. Texas No. 1 E. Farthing C, SE NW SE Section 4-1n-2e, Benoist at 1,872-87 feet, pumped 30 bbls. in three hours, rated a 140-bbl. well. Texas No. 7 O. Johnson, N half SE NE SW Section 5-1n-2e, Benoist at 1,727-71 feet, pumped 287 bbls. Ohio Oil Co. No. 8 R. L. Murray, E half NW SW SE Section 7-1n-2e, McClosky pays at 2,020-80 feet, at intervals, flowed 453 bbls. in 12 hours and was then shut in for lack of tank room. Texas Co. No. 5 Kalkbrenner, NE SE SW Section 5-1n-2e, Cypress sand at 1,616 feet, total depth 1,788 feet, pumped 24 bbls. in three hours, rated at 186 bbls. per day. Texas No. 10 Kalkbrenner, E half NE SE SW Section 5-1n-2e, McClosky at 1,978-80 feet, total depth; casing perforated at 1,820-60 feet in Aux Vases, and the well pumped 15 bbls. in three hours. Texas No. 15 V. Kalkbrenner, SW cor. SE NE SW Section 5-1n-2e. Benoist at 1,743-88 feet, flowed 32 bbls. in three hours. Texas No. 16 V. Kalkbrenner, N half SE NE SW Section 5-1n-2e, Benoist at 1,729-76 feet, flowed 40 bbls. in three hours, estimated at 280 bbls. per day. Texas Co. No. 9 H. Small, SE cor. NE NE NE Section 5-1n-2e, McClosky lime at 1,999-2,000 feet, total depth 2,012 feet, flowed 28 bbls. in three hours, rated at 196 bbls. per day.

New Wildcat Operations

In Greene County, Erie Drilling Co. No. 1 Frank Stelle, NE NE SE Section 1-8n-14w, drilling at 190 feet.

In Crawford County, H. R. Snavely No. 1 Lloyd Mann, 240 feet from north and 375 feet from west lines NE quarter Section 18-7n-12w of second principal meridian, rigging up machine.

In Madison County, L. C. Simmell and others No. 1 Mary Keller, NE NE SE Section 7-3n-8w, spudded and shut down.

In Wayne County, Held and Kingwood Oil Co. No. 1 Gibbs, NW NW SW Section 11-1n-9e, location.

In Washington County, Pitfer and others No. 1 Hafer, SE SW SW Section 22-1s-1w, drilling at 380 feet.

In Wayne County, New Penn Development Co. No. 1 B. O. Scott, 330 feet from west and 620 feet from north lines of SE quarter Section 7-2s-9e, location.

In White County, J. W. Pearson and others No. 1 Boultinghouse CWL SW SW Section 10-4s-14w of second principal meridian, derrick.

In Randolph County, R. T. Pendergast No. 1 Beattie, 75 feet from west and 360 feet from north lines, NW NW Section 14-5s-5w, derrick.

In Franklin County, Adams Oil & Gas Co. No. 1 Old Ben Coal Co., SW SW NE Section 19-5s-2e, old total depth 3,102 feet, will deepen to Devonian or Trenton lime.

Outpost and Wildcat Progress

In Menard County, Arthur Scroggins No. 1 Johnson Brothers, C SW SW Section 24-19n-5w, topped Niagara lime at 1,340 feet, total depth 1,570 feet, and will drill deeper.

In Champaign County, Sidney Oil & Gas Co., SE NE SE Section 10-17n-10e, drilling at 950 feet.

In Macon County, Decatur Oil & Gas Co. No. 1 Cook, NE NW SE Section 21-15n-2e, drilling at 2,546 feet.

In Christian County, Oil Development Co. No. 1 Post, SE SW NW Section 1-14n-1w, drilling at 150 feet.

In Shelby County, R. L. Fisher and others No. 1 Brownbeck, SE NE NW Section 25-12n-2e, derrick. Swords & McDougal No. 1 B. Dorst, NW NW NW Section 17-11n-2e, fishing for bailer, total depth 1,435 feet.

In Montgomery County, National Drilling Co. No. 1 Ward, NW NW NE Section 23-12n-5w, Trenton 2,307 feet, total depth 2,334 feet, reported dry and abandoned.

In Clark County, H. R. Snavely No. 1 Schofield, SE NE SE Section 6-11n-11w of second principal meridian, shut down at 855 feet.

In Coles County, R. F. Wheless No. 1 Michaels, SW SW NW Section 1-11n-7e, cleaning out at 1,901 feet, to put on the pump. This test was drilled to 2,173 feet and plugged back to 1,919 feet. Massad and others No. 1 Sommers, SE SW SW Section 20-10-1e, spudded and shut down.

In St. Clair County, A. H. Emenheiser No. 1 H. Alberts, CNL NW SW Section 31-1n-8w, total depth 1,228 feet, running 5⅛-inch casing.

In Wabash County, Taylor Drilling Co. No. 1 Schafer, SW SW SE Section 28-1n-12w, Glen Dean at 1,796 feet, drilling at 2,100 feet.

In Wayne County, G. A. Manahan No. 1 D. Fitch, C N half SW SE Section 3-1n-8e, moving in rotary tools. Pure Oil Co. No. 1 F. Behyner, C W half SE NE Section 4-1n-8e, rigging up rotary. G. A. Manahan No. 1 Fitch, C N half SE NE Section 10-1n-8e, spudded.

In Washington County, Smith and others No. 1 Marquard, SE NW SW Section 33-1s-5w, shut down at 1,002 feet.

In Marion County, Hawley Oil & Gas Co. No. 1 Copple, SW SW NE Section 28-1n-1e, total depth 2,007 feet, hole full of water, will underream 6-inch to bottom. Johnson and Betts No. 1 Johnson, NE NW NE Section 32-1n-1e, shut down at 1,835 feet. Hawley Oil Co. No. 1 A. O. Albert, NW cor. SW NE NW Section 3-1n-2e, McClosky lime at 2,155-56 feet, plugged back

(Continued on Page 118)

Five New Wells in Birk City and One in Spottsville Area

OWENSBORO, Ky., Feb. 13.—Birk City operators completed five wells in the past week, none of them measuring up to the initial production of the earlier wells in the field. Two wells were acidized but a 200-bbl. initial was the best that could be got out of either of them after the treatment. In the Spottsville district in Henderson County, M. T. Grubbs and others' test is a McClosky lime producer, but there was no estimate made on its potentiality. Following were the rather thin results of the week's activities in the western Kentucky fields:

Breckinridge County, Cloverport district: C. A. Johnson and others No. 2 William Snyder, moving in.

Daviess County, Utica district: A. V. Smith and others No. 5 Boyd Bristow, dry hole, total depth 1,650 feet. Major Oil Co. No. 1 Dr. A. A. Westerfield, moving in. Cane Run School district: Mecca Oil Co. No. 10 Zula Johnson, 110-bbl. well from McClosky lime. Gardner & Hanson No. 4 W. R. Jones, 5-bbl. well in Jett sand. Birk City district: Major Oil Co. No. 1 Federal Land Bank tract, estimate 200 bbls. from McClosky lime, total depth 1,904 feet. Ohio Oil Co. No. 4 Oscar Lively, estimated 200-bbl. well from McClosky, total depth 1,899½ feet. Major Oil Co. No. 2 Mrs. Carrie Long, estimated 75 bbls. a day from Jett sand, total depth 1,912 feet, plugged back to 1,261 feet. Major Oil Co. No. 4 Mirilda Wahl, 200-bbl. well, total depth 1,900 feet.

Henderson County, Spottsville district: M. T. Grubbs and others No. 1 Tyra Cooksey, total depth 2,240 feet, McClosky well, no estimate of production. Birk City district: J. C. Ellis No. 2 K. A. Jones, 40 bbls. a day from Bethel sand, total depth 1,947 feet, plugged back to Bethel.

Ohio County, Oklahoma district: H. M. Hunt and others No. 1 Sherman Howard, dry hole, through Jett sand. Snyder and others No. 3 C. T. Westerfield, dry hole, through Jett sand. Narrows district: Dehart and others No. 1 M. E. Powers, 50 acres, location.

EASTERN KENTUCKY

ASHLAND, Ky., Feb. 13.—Warfield Natural Gas Co. completed No. 4778, Sam Webb land, in Martin County, at a total depth of 2,753 feet, good for 353,000 cu. ft. of gas daily. The same firm also reports the completion of No. 4819 W. R. Wells and others, on Johns Creek in Floyd County, at a total depth of 3,227 feet, in Corniferous lime with an initial production of 585,000 cu. ft. of gas. Warfield Gas Co. has completed No. 4820, on the W. R. Wells and others land, at a total depth of 3,028 feet, with a flow of 429,000 cu. ft. of gas.

Columbian Fuel No. GW-830, on John Smith land No. 3, on Meathouse Branch, in Pike County, total depth 1,741 feet, in Maxon sand, started at 1,309,000 cu. ft. of gas daily. The same firm completed No. GW-830 on Tierney Land Co. tract No. 11, at Pigeon Roost, Pike County, at a total depth of 1,806 feet, in Maxon sand, with a daily flow of 1,212,000 cu. ft. of gas.

Columbia Fuel No. GW-831, on the Tierney Land Co., 312, on Coburn Branch, in Pike County, was good for 501,000 cu. ft. of gas per day, but the same firm drilled a dry hole in No. GW-829, on the Georgia A. Johns land No. 1, on Coburn Branch. The same firm completed No. GW-827, on the Big Sandy C. & C. Co. land No. 1, on Little Paint Creek, in Floyd County, at a total depth of 2,953 feet, with a completed log of 84,000 cu. ft. of gas from Corniferous lime. This was an acidized operation.

The Mountaineer O. & G. Co. No. 1 O. T. Alley, at Blackberry, in Pike County, total depth 3,600 feet, in shale, started with a daily flow of 238,000 cu. ft. of gas.

Penn Fitzpatrick reports No. 1, on Stephen Fitzpatrick land, on Middle Creek, in Floyd County, good for an initial production of 207,000 cu. ft. of gas in Maxon sand, but the gas exhausted itself and the hole will be drilled down to shale.

Drilling Activities

In Knott County, Kentucky West Virginia Gas Co. was building road to No. 579, on the Sherwood Osborne land, on Little Doty Branch, and also to the location for No. 580, on the H. H. Smith land, on Caney Fork.

The Inland Gas Corp. is moving in to No. 206, on the Zada Hutcherson land, on the Right Fork of Troublesome Creek, and made a location for No. 207 on the Curtis Pigman land, also on the Right Fork of Troublesome Creek. Mid City Gas Co. was drilling in shale (depth not given) in No. 2, on the R. H. Fields land, on Parks Branch. E. C. Ware, trustee, is down 1,095 feet in No. 1, on the John Perkins land, on the Right Fork of Troublesome Creek.

In Martin County, the Kentucky West Virginia Gas Co. is repairing machine at No. 5251, on the C. W. Preece land, on Coldwater Fork. Virginian Gas & Oil Co. will drill No. V-1269, on the Federal Gas, Oil & Coal Co. land, on the Peg Fork, of Coldwater Fork. The same firm made location for No. V-1270, on the N. J. Cassady No. 3 land, on Little Crooked. Shewey, Hale & Ware are down 1,575 feet in No. 1 Nan Stepp, on Davis Branch.

In Floyd County, Kentucky West Virginia Gas Co. made a location for No. 5250, on the William Crider land, on Johns Creek. Harris Oil & Gas Co. has shut down at the 1,380-foot level in No. 1, George Honaker land, on Camp Branch.

In Pike County, the Bent Mountain Oil & Gas Co. shut down in Berea at the 2,845-foot level in No. 1 Varney & Deskins Heirs, on Bevins Branch.

In Wolfe County, James I. Hollon reports a total depth of 3,807 feet in No. 1 D. H. Rose, on Red River. The same firm made location for No. 2 on the same farm.

That the FACTS

DRILLING

Judge James C. Wilson, Judge of the United States District Court for the Northern District of Texas, at Ft. Worth, filed his opinion in the case of the Hughes Tool Company vs. United Machine Company, et al, holding the patents in suit in that case owned by Hughes Tool Company were valid and infringed by the defendants, the United Machine Company. The following excerpts are taken from that opinion:

"Defendants are exclusively in the business of repairing, as they call it, plaintiff's bits. They contend that even though the claims relied upon are held to cover the accused devices, their acts here complained of do not constitute infringement of the patents in suit, under the rule of permissible repair.

"It is plain both in principle and in view of the pertinent decided cases that this rebuilding or any building-up of the worn teeth of the cutters is not a mere 'sharpening' of the cutters as defendants contend, but is a reconstruction that infringes the claim relied on of the Scott & Wellensiek patent No. 1,647,753 and the Fletcher patent, No. 1,856,627 respectively. When the cones are mounted to 'interfit,' it is an infringement of the Scott patent, No. 1,480,014, as well. The use by the defendants of metallic material of the used bits to make these devices is no less an infringement than would be the use of new metal therefor.

"The same observations are applicable to the bearing patents in suit in respect to the building up of the used device with new metal in the worn ball raceways or roller raceways or similar parts.

"The defendants contend that since they in instances worked on Hughes Tool Company bits at the request of drillers possessing them, they should not be held for infringement. This is unsound. I have pointed out that what defendants did was to reconstruct and without right. The drillers had no such right and would not have possessed it had title to the bits been in them. Of course a pat-

may be Known to the INDUSTRY

ented device may be repaired without infringement, if what is done is repairing in the sense of that word as applied to patented articles. The truth is what the defendants do is not repairing in any sense. It is rebuilding.

"As further bearing upon this issue, the plaintiff adduced testimony to show that defendants have no right to rework the Hughes bits because they are the property of the plaintiff. That evidence shows that title to the bits remains in plaintiff at all times.

"The defendants could, therefore, acquire no right to either repair or reconstruct from the driller as the driller had no such right to exercise or to transfer. Indeed, the driller is obligated to turn the plaintiff's bits back to the plaintiff and to no other.

"It follows that the defendants' conduct is without right on this ground alone, though as has been pointed out, infringement by the defendants has been clearly shown by the consideration hereinbefore set forth."

FOR 30 years HUGHES TOOL COMPANY has accepted as its obligation—the making available to the Drilling Industry of a safe, fast, economical Rotary Rock Bit.

Drilling requirements have been anticipated; lower footage costs assured—year by year; a new and better Hughes Rock Bit always "in the making."

This continuous program of laboratory and field experiments, involving enormous expenditures, can be continued only so long as the results of research and invention are available for further experiment and development.

HUGHES TOOL COMPANY
HOUSTON, TEXAS

Oklahoma Operations

By
DAL DALRYMPLE

Three New Ramsey Oil Wells, One Extends Field Eastward

Three producers were added in the Ramsey pool in Payne County, Oklahoma, the past week, one extending production east of the community block on which the other 19 wells in the field are located. One of the new wells was officially completed, another was washed in Sunday, February 12, and was at completion stage, and testing continued at the third producer.

Stanolind Oil & Gas Co. and others No. 1 Walters, SW SW NE Section 18-18-2e, the east extension producer, flowed 231 bbls. of oil in eight hours through 1-inch choke in most recent test and was shut in for connections. On initial test it flowed 120 bbls. of oil the first hour and 150 bbls. the second hour, then being shut in to rerun tubing in an effort to prevent sand interference. It topped Wilcox sand at 4,809 feet, total depth 4,823 feet.

Mid-Continent Petroleum Corp. and others No. 4 Brandon, NW SE NE Section 13-18-1e, was washed in. Hillsdale pool, Garfield County, was drilling ahead below 6,820 feet and looking for Arbuckle lime, after failing to find production in Wilcox sand. Operators expected to find the lime at about 7,000 feet. It was drilled through about 150 feet of Wilcox sand that was too hard and tight to carry oil, gas, and water, it was reported. The company's No. 1 Mackey, NW NW SE Section 4-24-8w, south offset to the discovery well, was averaging around 100 bbls. of oil daily at 6,703½ feet, total depth.

Among the Wildcats

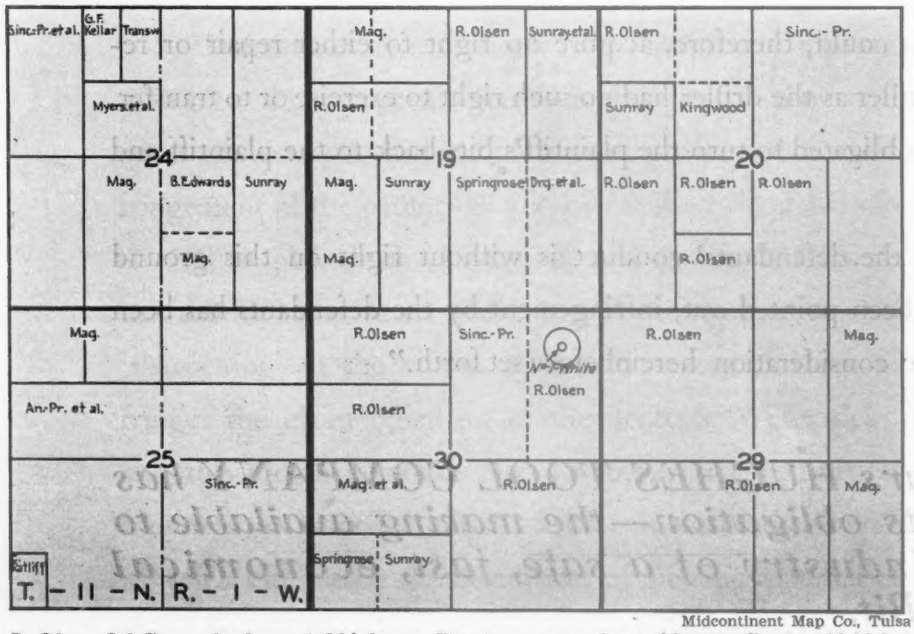
Homer Doup and others No. 1 Bond, NE NE SW Section 7-7-9, wildcat in the Holdenville area, Hughes County, found dry Booch sand at 2,970-3,010 feet and was dry and abandoned at 3,098 feet, total depth.

L. E. Lippert and others No. 1 Howard, NE SW NW Section 10-3n-19w, an old Jackson County wildcat, was in 24 hours when gas, estimated at 100,000 cu. ft., died. After additional perforations at 4,085-4,153 feet, it was swabbed at the rate of 130 bbls. of oil in 24 hours, producing from Misener and Hunton formations. It was acidized with 1,500 gallons, swabbed 10 bbls. of oil in 10 hours, reacidized with 5,000 gallons and operators were testing.

Starr Oil & Gas Co. No. 1 Georgia, SE SW NE Section 35-18-4, wildcat west of the March area in Payne County, was testing after showing an estimated 2,000,000 cu. ft. of gas daily. It found first Wilcox sand at 4,051 feet, second Wilcox sand 4,083 feet, was bottomed at 4,123 feet, water intruded and it was plugged back to 3,494 feet to test Skinner sand found at 3,463-93 feet.

Payne County

Mid-Continent Petroleum Corp. and associates No. 7 Ramsey, NW SE NW Section 13-18-1e, was completed, making the eighteenth producer in the Ramsey pool, Payne County. It flowed 1,132.65 bbls. of oil in four hours through tubing set at 4,719 feet, and 24-hour potential was estimated at 6,795 bbls. Production was from first Wilcox sand at 4,733-67 feet, total depth. Oswego lime was found at 4,040 feet; Hunton lime, with good saturation, 4,519 feet; Sylvan shale 4,561 feet, and Viola lime 4,655 feet.



Midcontinent Map Co., Tulsa

R. Olsen Oil Co. and others of Oklahoma City have started a wildcat in Section 30-11-1w, Newalla area, southeastern Oklahoma County

Estimated Daily Production

Estimated daily production for Oklahoma for the week ending February 11, and for the preceding week, was as follows:

	Barrels	
	Feb. 11	Feb. 4
Allen	6,175	5,975
Billings	5,125	4,975
Burbank	7,425	7,325
South Burbank	9,350	9,300
Balance Osage	17,750	17,500
Blackwell district	3,800	3,825
Bristow-Slick	6,900	6,925
Chandler	1,725	1,750
Crescent	3,675	3,325
Cromwell	3,050	3,075
Cushing-Shamrock	10,175	10,300
Duncan district	4,200	4,225
Edmond	5,125	4,500
Fish	2,575	2,600
Fitts	31,425	32,775
Jesse	2,750	2,625
Graham-Fox	4,250	4,225
Gray	850	825
Healdton	8,850	8,675
Hewitt	3,525	3,450
Keokuk	3,850	3,775
Konawa	1,275	1,250
Lucien	7,950	7,900
Moore	4,650	4,225
Oklahoma City	100,950	90,925
Olympic	3,150	3,100
Ramsey	2,800	2,600
Sasakwa	1,300	1,250
Sholem-Alechem	2,425	2,350
Seminole district:		
Bowlegs	7,775	7,675
Carr City	2,825	2,875
Dora	4,625	4,650
Earlsboro	4,550	4,625
South Earlsboro	525	550
East Earlsboro	3,900	3,925
Little River	6,575	6,675
East Little River	675	650
Maud	1,025	1,050
Mission	1,425	1,350
Seminole	7,475	7,375
East Seminole	1,550	1,525
Searight	2,250	2,300
Total Seminole	45,175	45,225
St. Louis-Pearson	26,200	25,650
Tatums	1,825	1,875
Tonkawa-Garber-Thomas	4,175	4,125
Wewoka	2,125	2,150
Yale-Jennings	3,650	3,675
Other pools	83,000	83,750
Total Oklahoma	433,200	422,000

Pottawatomie County

S. K. Vierson No. 2 Rhodd, NW NE SW Section 32-7-5, St. Louis field, Pottawatomie County, topped dolomite at 4,021 feet, total depth 4,083 feet, was

Sunday to become the twentieth producer in the field. It flowed 397 bbls. of oil the first hour, with 5,000,000 cu. ft. of gas; 343 bbls of oil and 4,900,000 cu. ft. of gas the second hour; 346 bbls. of oil and 4,800,000 cu. ft. of gas the third hour; and was given 24-hour potential rating of 8,699 bbls. Top of Wilcox sand was 4,826 feet. Earlier in the week same operators completed the eighteenth producer in the pool. Their No. 8 Ramsey, NE NW NW Section 18-18-2e, was drilling ahead below 4,353 feet.

Leases on 12,500 acres of Osage Indian lands in Osage County will be offered for sale at an auction to be held in Pawhuska March 22, according to announcement of C. L. Ellis, superintendent of the Osage Agency. Leases on 69 tracts of Indian lands in Cotton, Comanche, Caddo, and Kiowa counties will be sold on sealed bids received at the Kiowa Indian Agency in Anadarko at 10 a.m., February 24, W. B. McCown, superintendent, announced.

Champlin Refining Co. No. 2 Boehm, NE SE NW Section 4-24-8w, northwest of the discovery well in the dry and abandoned after deepening to 1,675 feet, total depth.

Kerlyn Oil Co. No. 1 Butterly, NE NE SE Section 22-1n-1e, an old wildcat in southern Garvin County, was preparing to deepen from 3,205 feet, total depth.

Ed Parsons No. 1 Stephens, C NE SW Section 29-4-9w, wildcat in the Sterling area of northeastern Comanche County and south of the Cement field, was drilling ahead.

Wood Oil Co. No. 1 Peters, SW SE NW Section 28-8-4, wildcat north of the St. Louis field in Pottawatomie County, topped Misener sand at 4,090 feet, Hunton lime 4,111 feet, Sylvan shale 4,155 feet, Viola lime 4,275 feet, Simpson dense 4,310 feet, dolomite 4,365 feet, Wilcox sand 4,540 feet, total depth 4,560 feet. Seven-inch casing was set at 4,448 feet. Casing was perforated at 4,378-86 feet, with water and only a small amount of oil showing. Perforations at 4,105-15 feet, 4,115-55 feet and 4,100-53 feet were without result, but oil and gas was found in perforations at 4,088-98 feet. It swabbed and flowed 125 bbls. of oil

acidized and produced 585 bbls. of oil in 24 hours.

Same operator's No. 1 Palmer Estate, SE SE NW Section 32-7-5, was completed for 250 bbls. of oil daily after acid treatment. Top of dolomite was 4,020 feet, total depth 4,054 feet.

Shell Petroleum Corp. No. 1 Younts, NW NW SW Section 28-7-5, an old well, was dry and abandoned after plugging back from 4,351 feet, total depth, to 2,880 feet.

Magnolia Petroleum Co. No. 2 Brister, NW SW NE Section 28-7-4, an old well, also was dry and abandoned after plugging back to 3,112 feet from 4,149 feet, total depth.

Associated Drilling Co. No. 3 Brown, SE SW NW Section 14-7-4, found dolomite at 4,197 feet, was bottomed at 4,218 feet, and pumped 54 bbls. of oil in the first 24 hours, and was completed.

Denver Producing & Refining Co. No. 1 Smith, NE NE NW Section 6-6-5, was plugged back from old total depth of 4,475 feet to 4,213 feet, acidized with 6,000 gallons and recompleted for 110 bbls. of oil daily.

Raycott Oil Co. No. 1 Kernn, SW SW NW Section 5-6-4, St. Louis-Avoca district, was bottomed at 4,624 feet, plugged back to 4,310 feet without finding production, and was abandoned.

New work in Pottawatomie County: Morgan & Flynn No. 2 School Land, SE SE NW Section 16-8-5, Maud district, location; S. K. Vierson No. 3 Palmer, NE SE NW Section 32-7-5, drilling; Delaney and others No. 1 Bruno, SE NE SE Section 31-7-5, building rig; J. E. Trigg No. 1 Truesdale, SW SW SE Section 21-7-5, rigging up rotary; Harry Schaffer No. 3 Zoller, SW NE NE Section 6-6-5, drilling; same operator's No. 4 Zoeller, NE cor. Section 6-6-5, location; Associated Drilling Co. No. 5 Schrader, SW SW NE Section 6-6-5, location; Harry Schaffer No. 1-B Zoeller, NW NW SW Section 5-6-5, location.

Seminole County

Superior Oil Co. No. 2 Tiger, SW SE SE Section 12-6-5, North Grayson area, Seminole County, topped Simpson formation at 3,706 feet, was bottomed at 3,805 feet in dolomite, and pumped 105 bbls. of oil in 24 hours.

Hall, Troup & Moore No. 4 Snyder, SW NE NW Section 4-6-6, Dora area, was completed for 125 bbls. of oil daily at 2,836 feet, total depth.

Rogers & Rogers No. 2 Stockton, NW SE SW Section 25-7-5, Hazel district, drilled to 2,963 feet, total depth, was shot at 2,952-60 feet, and pumped 178 bbls. of oil daily.

Cities Service Oil Co. No. 1 Gross, NW NW SE Section 25-9-6, Seminole City area, was plugged back from old total depth of 4,228 feet to 4,184 feet, acidized Viola lime topped at 4,125 feet, and pumped 156 bbls. of oil daily.

Horwitz, Jones & Soaper No. 1-A Harris, SE NW NW Section 22-10-7, was dry and abandoned at 3,581 feet, total depth.

Atlantic Refining Co. No. 2 Norvell, NW cor. Section 21-7-6, West Little River pool, was building rig.

Pontotoc County

Senora Oil & Gas Co. and others No. 1 Burke, SW SW SE Section 25-5-4, Bebee field, Pontotoc County, found Viola lime at 2,460 feet, was bottomed at 2,592 feet, acidized, and pumped 30 bbls. of oil daily.

Same company's No. 1-A Parks, NE cor. Section 18-5-5, was drilling below 1,700 feet.

Lincoln County

Wilcox Oil & Gas Co. No. 2 Lycon, NW SW SW Section 11-14-6, Sac and Fox pool, Lincoln County, topped Prue sand at 2,888 feet, total depth 2,971 feet, was shot with 160 quarts and pumped 60 bbls. of oil daily.

Same company's No. 21 Sac and Fox, NW SW NW Section 15-14-6, was completed for 288 bbls. of oil daily. Prue sand, topped at 2,927 feet, was shot with 100 quarts. The hole was bottomed at 3,028 feet.

Big Chief Drilling Co. No. 1 Woodrow, SE SE SE Section 34-15-2e, North Wellston pool, pumped 15 bbls. of oil daily and was completed at 5,058 feet, total depth.

Oklahoma-Logan Counties

Inland Development Co. No. 3 Horn, SW NW NW Section 27-12-3w, Oklahoma City field, Oklahoma County, produced 75 bbls. of oil in 24 hours and was completed at 6,509 feet, total depth.

Canadian Petroleum Co. No. 1-A Graham, SW SW NE Section 2-11-3w, Oklahoma City area, topped first Pawhuska sand zone at 3,087 feet, found other zones at 3,158 feet, 3,310 feet, 3,490 feet, 3,715 feet, and was dry and abandoned at 4,245 feet, total depth.

Helmerich & Payne, Inc., No. 1 Watson, NW NW SE Section 27-16-1e, Meridian district, Logan County, produced 25,700,000 feet of gas daily after acid treatment, and was completed at total depth of 5,390 feet.

Osage County

Sinclair Prairie Oil Co. completed No. 4-T Osage, NW NE SW Section 22-25-6, South Burbank district, Osage County, for 15 bbls. of oil daily. It found Bartlesville sand at 2,724-44 feet, total depth 2,746 feet.

W. C. Norris No. 10 Osage, NE SW SE Section 24-25-8, had Mississippi lime at 2,384-2,424 feet, total depth, and pumped 25 bbls. of oil in 24 hours.

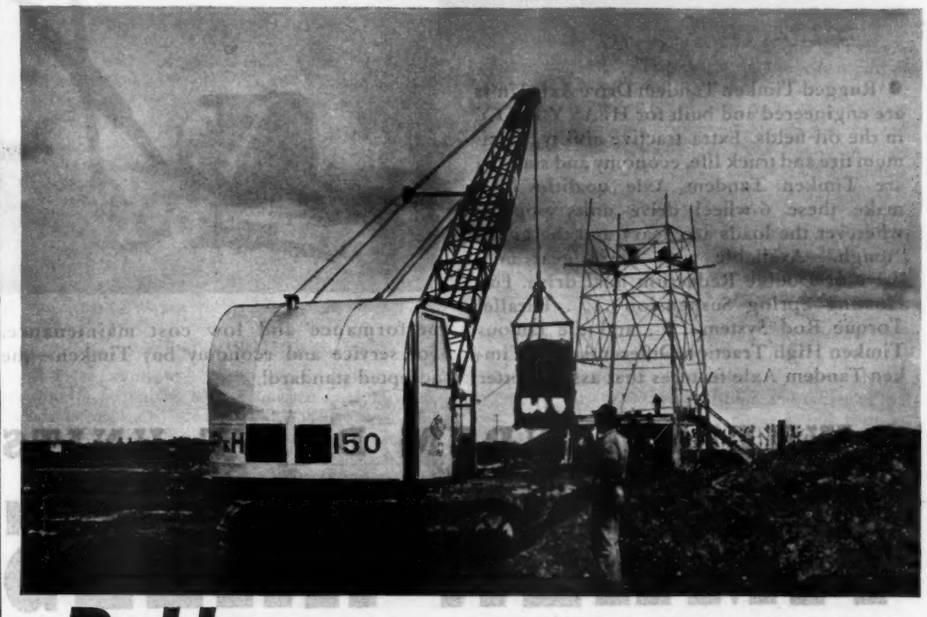
Barnsdall Oil Co. No. 7 Osage, 1,520 feet from the south line and 1,620 feet from the east line, SW quarter Section 23-24-10, was estimated good for 140 bbls. of oil daily from Bartlesville sand at 1,734-70 feet, total depth, completed.

Mid-States Oil Corp. No. 1 Osage, SE NW SW Section 5-25-10, was a location. Sinclair Prairie Oil Co. No. 9 Osage, SW SE NW Section 22-25-6, was moving in material.

Eastern-Northeastern Area

In Muskogee County Beard No. 1-A Lewis, CEL SW SW Section 32-14-6, Boynton area, was bottomed at 2,185 feet, plugged back to 2,171 feet, acidized and pumped 5 bbls. of oil daily. P. Atkins No. 2-A Anicker, NE SE SE SE Section 14-14-16, was dry and abandoned at 1,540 feet, total depth. Wirick-Weimer No. 1 Dixon, SE NW NW Section 3-13-16, was dry and abandoned at 3,190 feet, total depth.

In Wagoner County, Hartman & Morrow and others No. 1 Johnson, NW NW SE Section 31-16-17, was a failure at 1,252 feet, total depth. North & Shreve No. 1 School Land, SW SE SE Section 17-17-17, total depth



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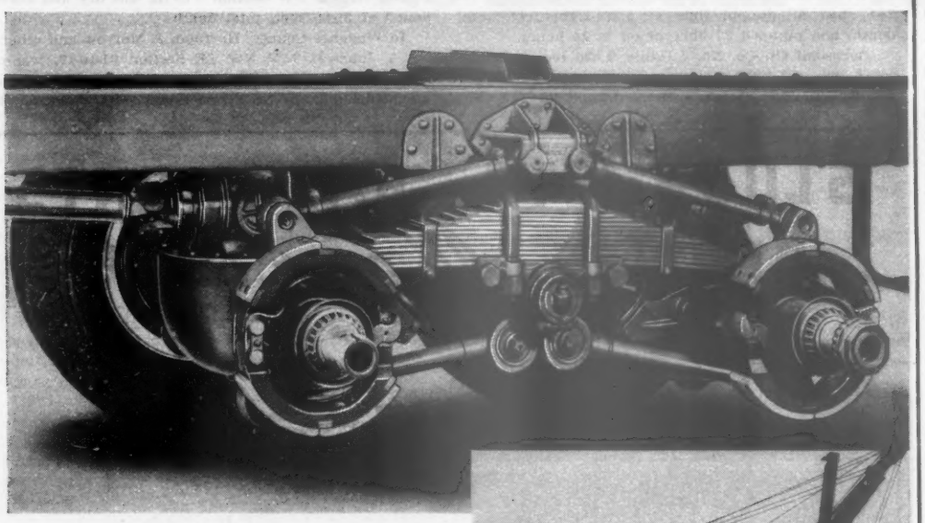

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1,220 feet, was dry and abandoned. Sewell & Hanson No. 1 Thompson, SE NW SW Section 15-19-16, total depth 493 feet, produced 93,400 feet of gas daily.

North & Shreve No. 10 Meier, NE NE NE Section 33-19-14, Alsuma area, Tulsa County, was dry and abandoned at 1,395 feet, total depth.

Richardson & Davis No. 1 Collins, SE NE NE Section 10-19-16, Inola area, Rogers County, total depth 933 feet, was dry and abandoned.

In Creek County, Mazda Oil Co. No. 1 McAdams, NE NW SE Section 36-17-9, drilled to 3,101 feet without success and was abandoned.

Garfield County

James Oil Co. No. 1 Wolf and others, SE SW NW Section 13-22-4w, Garber pool, Garfield County, was dry at 4,626 feet, total depth, and was abandoned.

Hughes-Okfuskee Counties

McGee No. 3 Lucas, NE SW SW Section 1-9-10, northern Hughes County, was abandoned at total depth of 1,200 feet.

Shell Petroleum Corp. No. 2-A Keys, NE SE NW Section 11-11-8, was drilling below 970 feet. Irek Oil Co. No. 2 Scott, NE NW SE Section 24-12-8, had dug cellar and pits. Both are in Okfuskee County.

Murray County

Comet Drilling Co. No. 1 Torby, C NW NE Section 17-1n-2e, was dry and abandoned at 2,505 feet, total depth, in sandy shale. It is near the Wolf discovery well, north of Davis, in Murray County.

Southwestern Oklahoma

Magnolia Petroleum Co. No. 2 Henley, SW NE NE SE Section 35-6-10w, Cement field, Caddo County, produced 2,000,000 feet of gas daily and was completed at 4,760 feet, total depth.

O. P. Burnham No. 4 Sumner, NE NW SE Section 6-1s-19w, Tipton pool, Jackson County, found granite wash at 2,502-30 feet, total depth 2,578 feet, and pumped 73 bbls. of oil in 24 hours.

George L. Pace No. 18-A Watkins, SE NW SE Section 21-2s-7w, Comanche pool, Stephens County, had sand at 1,723-28 feet, total depth 1,731 feet, plugged back to 1,726 feet, and pumped 20 bbls. of oil and 40 bbls. of water in 24 hours.

Mudge Oil Co. No. 17 Crosby, NE SE SW Section 23-1s-5w, Stephens County, was a location.

Magnolia Petroleum Co. No. 6 Pan-Kune, SW NE NE Section 10-5-9w, an old well in the Cement field, was building derrick, preparatory to deepening. Ohio Oil Co. No. 5 Lackey, NW SW NW Section 11-5-9w, was location for a new test at Cement.

C. H. Tilford No. 2 Meyers, C E half SE NE Section 25-7-21w, an old well in Greer County, was cleaning out, preparing to deepen from 881 feet.

Other First Reports

In Love County Sinclair Prairie Oil Co. No. 2 Stockton, NE NE SW Section 26-6s-2w, was a location.

In Okmulgee County E. I. Newblock No. 1 Jackrabbit, SW NW NW Section 36-15-12, was drilling below 800 feet. W. B. Pine No. 1-A Duff, SW SW SE Section 11-14-12, was moving in machine.

In Muskogee County Metzger & Poltz No. 10 Francis, CNL NW SW Section 1-14-18, was drilling below 490 feet. R. L. Holifield No. 1-A Durant, NW SE NW Section 27-14-15, was bottomed at 800 feet in salt and sand, and was abandoned.

California Association to Meet At Houston Oil Show

Oil men and oil tool manufacturers and representatives from California together with ex-Californians now engaged in any branch of the oil business in other states are invited to attend the California dinner, Friday, April 28, to be held in connection with the Oil-World Exposition at Houston, Tex., from April 24 to 29, inclusive. Ed Lenzner, general manager, advises that approximately 250 men will attend this dinner being arranged by the California committee.

The committee consists of S. T. Childress, Rio Bravo Oil Co., chairman; H. J. Craig, Baash-Ross Tool Co.; Paul Hubbard, Gulf Oil Corp.; C. F. Bedford, Stanolind Oil & Gas Co.; W. W. Scott, Humble Oil & Refining Co.; D. B. Collins, Shell Petroleum Corp.; Chase E. Sutton, Pure Oil Co.; John R. Suman, Humble Oil & Refining Co. and Ed Lenzner, general manager, Oil-World Exposition.

Eastern Field Report

By STAFF CORRESPONDENT

Completed Wells Kept Down to a Dozen by Flood Waters

PITTSBURGH, Pa., Feb. 13.—Completions were at a minimum during the past week, with the lower eastern fields cleaning up after the heavy floods. A total of 12 operations completed included three dry holes, eight gas wells, and 1 oil well with an initial of 15 bbls.

In Southeast Ohio the test of the Columbian Carbon Co. on the George D. Miller farm, near Cadiz Junction, in Section 23, German Township, is being deepened. The Oriskany here was at 4,769-90 feet and void of any showing. It is now drilling at 5,073 feet, with a showing of gas at 4,814 feet. The surface elevation is 1,223 feet, with the Berea topped at 1,384 feet. It will be drilled to the Newburg.

In Monroe County, Southeast Ohio, H. B. Walker & Co. completed a test on the E. C. Beall and George Eberlee lease in the SE quarter Section 33, Sunsbury Township, in the Berea sand at a depth of 2,295 feet. It is a gas well gauging 250,000 cu. ft. a day.

In Washington County, C. W. Schramm and others completed a second test on the Harry Felter farm on Ox Bow Creek, in Section 33, Independence Township, in the Berea grit at 1,872 feet, and it is a gas well gauging 100,000 feet a day. This was a former Salt sand well.

SOUTHWEST PENNSYLVANIA

In Center Township, Greene County, Pennsylvania, Carnegie Natural Gas Co. completed No. 4 J. H. Orndoff farm, and it is showing for about 15 bbls. a day. The Nineveh Thirty-foot sand was topped at 3,199 feet, with oil at 3,204-06, 3,208-10, and 3,222-27 feet.

In Washington Township, Greene County, Equitable Gas Co. deepened a well on the C. A. Ross farm to 3,009 feet, with the Bayard sand at 2,861-66 feet and 23,500 cu. ft. of gas at 2,964 feet. It will be abandoned. This company's test on the Pratt Yeager farm was also deepened with a total depth of 2,385 feet and no additional gas. It will be plugged back and the Gantz sand turned into the lines. In Indiana County this company will drill No. 3,245 on the Elizabeth Gray farm, in Washington Township, elevation 1,326.71 feet, and in Armstrong County will drill on the Jennie Wells farm, in Cowanshannock Township, elevation 1,260 feet.

In North Strabane Township, Washington County, Beedle, DeBone and others have reached 2,750 feet in the test on the J. C. McNary farm, with the Fifty-foot sand at 2,215-62 feet and some gas and water at 2,254-56 feet. It is now drilling in the Fifth sand, with a showing of 100,000 cu. ft. a day, and will be drilled to the Speechley.

In Hopewell Township, Washington County, McFadden & Co. have reached 900 feet in the test on the J. W. Reed farm, with 10,000 feet of gas showing in the Little Dunkard sand. In Hanover Township, R. M. Duden and others are shut down in the test on the Roy Scarum farm.

In North Fayette Township, Allegany County, Young Brothers have reached 1,700 feet in the test on the James Sturgeon farm. In Shaler Township, J. S. Wally is drilling at 1,600 feet in the test on the Wilson Shaw farm.

In Monongahela Township, Greene County, Monongahela Oil & Gas Co. is drilling at 1,675 feet in the No. 3 Vance Heirs, with the Big Injun sand at 1,369-1,560 feet. Brummage and others are down 1,850 feet deepening No. 1 S. G. Durr.

In Franklin Township, Gartland Oil Co. had reached 2,770 feet deepening No. 1 J. L. Donley. In Morris Township, McVay and others were drilling at 2,255 feet on the Elmas Loughman farm; and the test of Furman Nuss on the C. H. Ewing farm, total depth 1,717 feet, and Big Injun sand topped at 1,696 feet, had a gas volume of 1,250,000 cu. ft. a day at 1,704-17 feet.

In Morris Township, O. I. Dille and others are drilling at 150 feet in the second test on the Ellsworth Beckham farm. J. B. Myers is down 150 feet in the test on the Sallie Morris farm in Franklin Township. In Richhill Township, Burleigh Wright has rigged up the test on the Strawn heirs farm.

Deep Tests

In Merces County, Carnegie Natural Gas Co. is drilling through the Clinton sand on the A. S. McCullough farm in Jefferson Township. The top of the red sand was at 5,262 feet; Clinton, 5,343 feet; and the tools have reached 5,391 feet without any showing of oil or gas. The sand is very hard.

Little progress was made on the Chestnut Ridge test during the week. On the Indian Creek Coal & Coke lease, the New Penn Development Co., William E. Snee and others resumed drilling. The depth at present is 6,950 feet, or 27 feet in the cherty zone of the Onondaga lime, and without any showing of gas. The gas in the upper pays of the Onondaga have been small and could easily be missing. The location is South Union Township, Fayette County.

In North Union Township, north of Route 40, Wasson & Co. have resumed drilling the test on the J. H. Sorg farm after installing gates and a blowout preventer. The depth of the hole was 6,931 feet, or 1 foot in the chert.

In Springhill Township, Fayette County, about 1.1 miles north of the state line, the L. J. Houze Convex Glass Co. again has a fishing job at about 7,625 feet. It is believed additional gas was struck, which raised the tools and kinked the line.

In Armstrong County the Peoples Natural Gas Co. are drilling at 475 feet in the deep test on the Lowry Martin farm in Wayne Township.

WEST VIRGINIA

In Tyler County, West Virginia, one test had a small showing of oil on the Minnie Johnson farm in Union Township, drilled by Don E. White. There was about one-fourth barrel a day showing in the Squaw sand and a showing of oil in the Keener sand.

In Boone County the Cameron Oil & Gas Co. completed a second test on the Rosa and Virgil Smoot farm in Crook district as a gas well at 2,146 feet. It produced 160,000 cu. ft. a day, without shot, from sand at 2,111-41 feet.

In Cabell County the Mountaineer Gas Co. completed the second test on the Nelson heirs farm in McComas district at a total depth of 3,836 feet, with 106,000 cu. ft. a day coming from the Brown shale.

In Pleasants County, Dinsmoor & Co., on the R. T. Eddy farm in McKim district, have a gas well gauging 200,000 cu. ft. from the Squaw sand, total depth 2,080 feet.

In Ritchie County, Moore Farm Oil Co. completed a second test on the W. F. Moore farm, in Clay district, in the Squaw sand, at a total depth of 2,059 feet as a gas well, gauging 360,000 cu. ft. a day. In Murphy district Reno Oil Co. completed No. 3 T. F. Overton in the Injun sand at 1,732 feet as a gas well gauging 500,000 cu. ft. a day. In Union district the test of Moats & Barker on the Spencer Fowler farm was dry in the Injun sand at 2,000 feet. In Grant district, T. J. Davis and F. A. Deem drilled a second test on the Frank Foster farm through the Injun sand to 1,900 feet, and it was dry.

In Roane County, R. W. Heasley completed a test on the Joseph Fields farm, in Harper district, in the Salt sand, total depth 1,495 feet, and it is a gas well gauging 319,000 cu. ft. a day with the sand topped at 1,443 feet and the gas at 1,448-95 feet.

Oriskany Gas Field

There were no completions in the Oriskany gas field in Kanawha County. In Jackson County, close to the Kanawha County line, Godfrey L. Cabot, Inc., completed the test on the Walker & Jones lease in Washington district after a fishing job in the sand at 5,136 feet, with a final gauge of 6,363,000 feet a day and a rock pressure of 1,730 pounds.

In Poca district, Kanawha County, the United Fuel Gas Co. made two additional locations. The No. 4830 will be drilled on the C. O. Slater and others lease and No. 4831 on the B. C. Gillespie farm. The West Virginia Gas Corp. is building a rig on the W. H. and T. E. Reese farm. The Union Carbon Co. is grading the road to the test on the A. H. Campbell farm. The Columbian Carbon Co. is drilling at 1,546 feet L. M. Fields and others' test, and in Elk district drilling at 2,940 feet in the M. N. Landers and others test.

Outside Deep Tests

In Jackson County the Columbian Carbon Co. is drilling out cement at 700 feet on the G. W. Lathey farm in Ripley district, about 6 miles southwest of the town of Ripley. In this district Everett Starcher and others had reached 2,540 feet on the R. R. Boggess farm. In Ravenswood district Joe Rubin, N. P. Johnston and others were drilling at 1,684 feet on the D. P. Curry farm and were delayed on account of engine trouble and impassable roads. The Big lime was topped at 1,600 feet. In Pleasants County the test of the Columbian Carbon Co. on the Giles Hammat farm, in Grant district, is shut down at 4,769 feet.

New Work

In Cabell County, R. D. Adkins, trustee, is drilling at 200 feet on the U. G. Bledsoe farm in McComas district; Wade Gas Co. is at 950 feet on the Nelson Holton heirs; and in Grant district the Big Two Mile Gas Co. is drilling at 450 feet on the W. W. Connor farm.

In Calhoun County, W. H. Bickel is drilling at 758 feet on the Luerna Barr farm; Gunn and others at 370 feet on the Luerna Barr farm; H. S. Adams heirs at 1,030 feet in No. 2 F. M. Wilmoth Heirs, all in Sherman district. In Sheridan district, D. A. Cronin is shut down for casing at 1,600 feet in the Bruce Bell second test.

In Gilmer County the Pittsburgh & West Virginia Gas Co. made a location for No. 7665 A. L. Cottrill in Glenville district, and was drilling at 1,461 feet on the Alexander Lyons farm. Kidd & Marsh were drilling at 1,623 feet on the Glenville State Teachers College land, In DeKalb district Paul K. Weekley is rigging up on the Stern & Turner lease.

In Kanawha County, Pure Oil Co. is building rig for No. 10 Slaughters Creek Coal & Land Co. in Cabin Creek district. In Lewis County, Pittsburgh & West Virginia Gas Co. is shut down at 2,726 feet on the J. B. Brannon farm in Court House district.

In Lincoln County R. H. Adkins is drilling at 1,260 feet on the Osa Lovejoy farm, in Jefferson district, and fishing at 1,450 feet on the T. C. Collins farm in Carroll district. In Duval district Cambridge Gas Co. is cementing casing in the second test on the Edward Davis, Sr., heirs.

In Marshall County, G. B. and A. C. Patterson are drilling at 2,540 feet deepening the No. 1 W. B. Patterson in Liberty district, with the Pittsburgh Coal at 1,077 feet and the Big Injun bottomed at 2,515 feet.

In Mingo County, W. E. Burchett is drilling on the B. F. Meade farm and had reached 2,300 feet. This is in Kermit district. In Harvey district, Red Jacket Coal Co. had reached 2,350 feet in No. 6 fee.

In Ritchie County, W. R. Corey made a location on the Frank Kelley farm in Murphy district, elevation 1,024.1 feet. In Clay district, Mole Hill Oil & Gas Co.

(Continued on Page 119)

Slaughter Outpost Showing Oil; Increase in Wildcatting

By D. H. STORMONT

FORT WORTH, Tex., Feb. 13.—The possibile extension of Hockley County's Slaughter pool, an increase in the development of Schleicher County's gas field, and a general upturn in wildcat activity throughout the entire Permian Basin area, featured one of the most active weeks in the West Texas district since the start of the year.

A mile northeast of the northwest end of production in Hockley County's Slaughter pool, Sid Richardson No. 1 Coe, indicating one of the major extensions since the field's discovery, is coring below 4,972 feet with several heads of oil having been reported. Using oil to circulate, operators started coring at 4,890 feet with shows of oil and gas logged to 4,906 feet, followed by soft lime to 4,914 feet. Another show was picked up at 4,934 feet where the well made several unestimated heads of oil. In showing as a producer the well opens considerable more acreage for development and greatly increases the importance of the field. Location is in Labor 53, League 40, Maverick County School lands.

Also due to stimulate development in the Slaughter and several other North Basin fields was the announcement by W. D. Richardson of Fort Worth that he and associates construct a refinery at Levelland in central Hockley County which will furnish an outlet for crude from the Slaughter, Duggan and Dean pools of the northern basin area.

In Yoakum County several wildcat tests attracted attention during the week. Seeking a mile and a half extension to the east side of the Denver pool, Texas Pacific Coal & Oil Co. No. 1 Brownfield, Section 802, was last reported drilling below 1,550 feet. This test is about midway between the Denver pool and the Bennett pool and its results should do much to prove or disprove the much discussed question of whether the two large pools lie on a single gigantic structure.

Two miles northeast of the Bennett pool, Shell Petroleum Corp. No. 1 Waples-Platter, Section 616, was waiting on cement after setting 13-inch casing at 285 feet.

Southern Basin Area

In south central Schleicher County's gas field, Lone Star Gas Co. No. 1 Humble-Bert Page has drilled to 2,300 feet in sand and shale. The test is 660 feet from the north and 1,985 feet from the east line of Section 30, Block 5, G.H.&S.A. Survey, 1 mile southeast of the Cooper Gas Co. No. 2 Page, one of the larger gas wells completed in the field. About a mile west and slightly north of the Cooper Gas Co. No. 1 Page, discovery gas and distillate well for the field, Lone Star Co. No. 2 Humble-Bert Page, was underreaming 10-inch casing to the total depth of 1,685 feet. The test is in Section 46, Block L, G.H.&S.A. Survey.

In the northwest extension area of Crane County's Dunes pool, a Railroad Commission gauge of 70 bbls. of oil daily has been assigned to the Great Western Producers, Inc., No. 1-A University. A mile northeast of the area, failure appeared for the Standard Oil Co. of Texas No. 1-4 University, Section 4, Block 30. The test is shut down for orders at a depth of 3,610 feet after having been plugged back and tested intermittently from a total depth of 3,745 feet. The last test on the well from 3,543-3,610 feet netted only 22 gallons of water and 3 gallons of oil in two hours.

Ector County's important wildcat test, Continental Oil Co. No. 1-8 Mrs. L. E. Wight, Section 8, Block 43, T.&P. Survey, which had indicated a link between the Goldsmith pool and the North Cowden pool, was running tubing to test after being deepened from its indicated production horizon to 4,411 feet. At 4,365 feet the test had swabbed 29 bbls. of fluid, 12 per cent water, in 24 hours.

Wildcats Staked

A wildcat test in west central Brewster County, 14 miles east of the Presido County line, has been staked by H. D. Wilcox. Test is his No. 2 Kokernot, 1,800 feet from the north and 1,200 feet from the east lines of Section 23, Block C, J. V. Massey Survey. Operator is rigging up machine for the test three-fourths of a mile southeast of the No. 1 Kokernot, which has been shut down for orders for some time at 2,328 feet.

Wildcat test for northern Pecos County, in the vicinity of the Magnolia Petroleum Co. No. 1-A Tex-Mex-McKee, Ordovician failure, has been staked by George T. Abell as his No. 1 Williams. Location is in the eastern part of Section 11, Block 3, H.&T.C. Survey. Contracted to 2,500 feet, it is 1¾ miles southwest of the deep Magnolia failure.

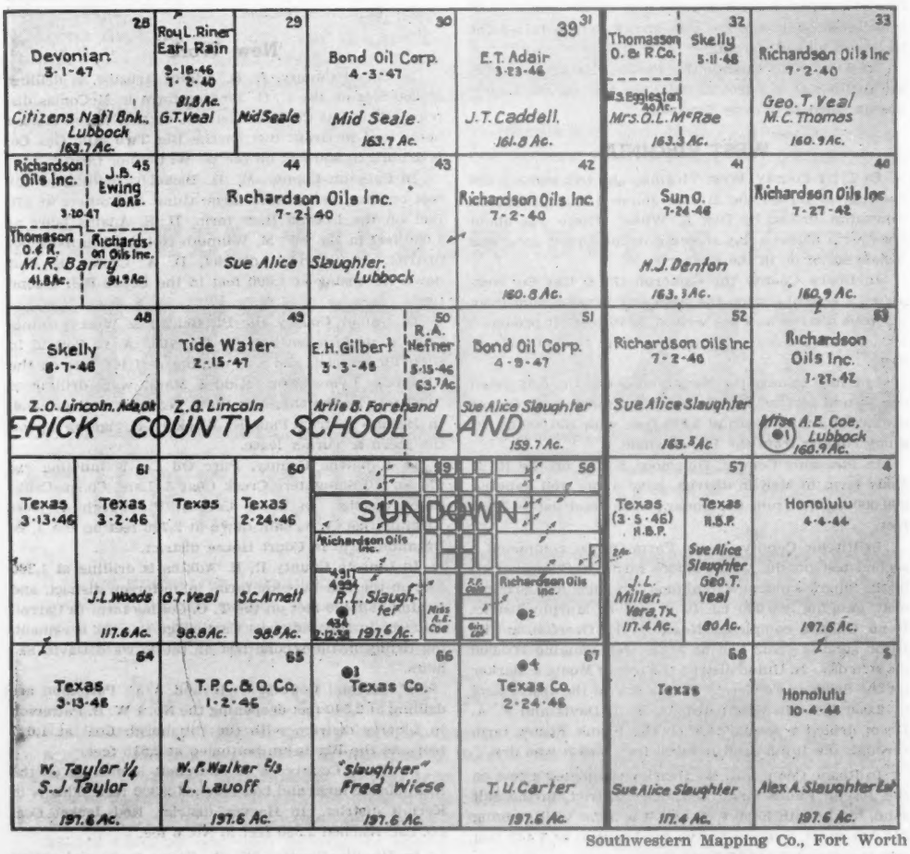
One-half mile southwest outpost to the most southwestern edge of production in the Keystone pool of Winkler County has been staked by the Standard Oil Co. of Texas. Test is the No. 2 Baird, located in the northeast corner of Section 13, Block 3-A, P.S.L. Survey.

Farmouts for Drilling

Drilling of 42 tests on proven and semi-proven acreage in the McCamey district in Upton and Crane counties is provided in the farming out of leases by the Texas Co. and the Cordova Union Oil Corp. to the Parker Drilling Co. of Tulsa and Fort Worth, Alf Reese, Jr., and J. L. Reese, both of Midland, and to Harvey, Sergent & Rutter of El Paso.

On the Crane County side of the McCamey field, the Texas Co. farmed out to the Parker Drilling Co. all of the north quarter of Section 22, Block 35, H.&T.C. Survey, except the north quarter of the north quarter, a total of 120 acres, for the drilling of two tests, one of which has been started. The Texas Co. retained a one-sixth override and rights below 2,750 feet. In Upton County, Texas Co. and Cordova Union turned to Alf Reese, Jr., and J. L. Reese the north quarter of the north quarter of Section 51, Block 35, H.&T.C. Survey, which is southeast of Anderson-Prichard production in Section 50. The deal provides the completion of two tests by October 1, 1939. Texas Co. will have the rights below 2,750 feet, a one-eighth override on daily allowable production up to 35 bbls. per day, and a three-sixteenths override for daily allowable production exceeding 35 bbls. per well.

The largest deal in the entire group of farmouts was the receiving by the Parker Drilling Co. in Upton County of several half sections centering around Sections 1, 9, and 11. The drilling company acquired in all some 700 acres and are obligated to drill four tests, then keep two strings of tools running until 30


Devonian 3-1-47
Citizens Natl Bnk., Lubbock 163.7 Ac.
Roy L. Riner Earl Rain 9-18-46 1-2-40 81.8 Ac. G.T. Veal
Mid Seale
Bond Oil Corp. 4-3-47 Mid Seale 163.7 Ac.
E.T. Adair 3-23-46 J.T. Caddell. 161.8 Ac.
Thomasson O. & R. Co.
Skelly 5-11-46
W.S. Eggleston 160 Ac. Mrs. O.L. McRae 163.3 Ac.
Richardson Oils Inc 7-2-40 Geo. T. Veal M.C. Thomas 160.9 Ac.
Richardson Oils Inc. 3-10-47
J.B. Ewing 40 Ac.
Thomason O. & R. M.R. Barry 41.8 Ac.
Richardson Oils Inc. 34.9 Ac.
Richardson Oils Inc. 7-2-40 Sue Alice Slaughter, Lubbock
Richardson Oils Inc. 7-2-40 160.8 Ac.
Sun O. 7-24-46 M.J. Denton 163.3 Ac.
Richardson Oils Inc 7-27-42 160.9 Ac.
Skelly 8-7-46 Z.O. Lincoln Adv. Ot
Tide Water 2-15-47 Z.O. Lincoln
E.H. Gilbert 3-3-46
R.A. Hefner 5-15-46 63.7 Ac.
Arlie B. Forehand
Bond Oil Corp. 4-9-47 Sue Alice Slaughter 159.7 Ac.
Richardson Oils Inc 7-2-40 Sue Alice Slaughter 163.3 Ac.
Richardson Oils Inc. 7-21-42 Miss A.E. Coe, Lubbock 160.9 Ac.
ERICK COUNTY SCHOOL LAND
Texas 3-13-46
Texas 3-2-46 J.L. Woods 117.6 Ac.
Texas
Texas 2-24-46 S.C. Arnett 98.8 Ac.
SUNDOWN
Richardson Oils Inc.
R.L. Slaughter 4931 4934 2-12-38 197.6 Ac.
Miss A.E. Coe
Richardson Oils Inc.
Texas (3-5-46) H.B.P.
Texas H.B.P. Sue Alice Slaughter Geo. T. Veal 80 Ac.
J.L. Miller, Vera, Tx. 117.4 Ac.
Honolulu 4-4-44 197.6 Ac.
Texas 3-13-46 W. Taylor 1/4 S.J. Taylor 197.6 Ac.
T.P.C. & O. Co. 1-2-46 W.P. Walker 2/3 L. Lauoff 197.6 Ac.
Texas Co. "Slaughter" Fred Wiese 197.6 Ac.
Texas Co. 2-24-46 T.U. Carter 197.6 Ac.
Texas Sue Alice Slaughter 117.4 Ac.
Honolulu 10-4-46 Alex A. Slaughter Est. 197.6 Ac.

Southwestern Mapping Co., Fort Worth

In Hockley County, Sid Richardson Oil, Inc., is indicating a mile northeast extension to production in the Slaughter pool. His No. 1 A. E. Coe is coring below 4,972 feet with several heads of oil having been made

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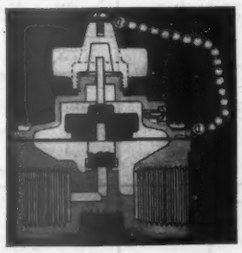
RegO No. 2937 Automatic Low Pressure Cut-Off Valves prevent expensive accidents which may occur as a result of temporary drop or shut-off of the gas flow into the household appliance. Disastrous fires and explosions are frequently caused by the re-established flow of gas if every appliance is not fully protected by a RegO Automatic Low Pressure Cut-Off.

This valve automatically cuts off when the gas flow to the appliance drops temporarily below normal operating pressure, thus preventing the escape of gas from an open appliance when the pressure again builds up. The cut-off valve must be opened manually to re-establish the flow of gas.



Accurately machined and fully tested . . . capacity in excess of 30 cubic feet per hour . . . operates freely at gas pressure of 10" water column . . . cuts-off automatically when pressure drops to 3" water column . . . inlet and outlet are ¾" taper pipe thread.

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Chicago, Ill.

more tests have been drilled. On all of the tracts the Texas Co. reserved rights below 2,750 feet.

WEST CENTRAL TEXAS

West extension for Jones County's Griffin pool, the discovery of a new shallow oil pool in Jack County, and general wildcat and field extension activity throughout several other counties, featured a busy week for the West Central Texas district.

A producer on the high school campus of Avoca was assured to extend production in the Griffin pool westward. The W. H. Peckham of Wichita Falls, No. 1 Avoca School, was reported flowing an estimated 70 bbls. of oil per hour at a total depth of 3,280 feet. Storage has been erected and the new well will be given its official gauge the first of the week. It is located in townsite Block 7, Section 21, H.&T.C. Survey, and topped the Palo Pinto pay of the pool at 3,272 feet. Another producer for the new area was assured at the Iron Mountain Oil Co. No. 3 Taylor, Section 199, B.B.B.&C. Survey, on the east edge of the field. The well flowed at the rate of 150 bbls. of oil per hour at a total depth of 3,229 feet after topping the pay at 3,214 feet.

In northwestern Shackelford County's Ivy pool, Iron Mountain Oil Co. No. 6 Beck, Section 162, B.B.B. &C. Survey, extending the area a location to the south, was rated at 2,000 bbls. of oil daily after acid treatment with 1,000 gallons. Pay was topped at 3,186 feet and drilled to 3,205 feet, total depth. This is the largest initial potential registered in the pool, and is the first well to be drilled south of the discovery well in the area. Furthering the development on the south edge of the field, Iron Mountain company has moved its rig from the No. 6 Beck one location farther south and is preparing to drill No. 7 Beck. Owen-Snebold Oil Corp. is also preparing to start a test southwest of the discovery well and just west of the Iron Mountain Oil Co. No. 6 Beck.

Prospects for reviving production in Young County's old Oil City pool were seen when Mid-Continent Petroleum Corp. drilled 20 feet of saturation in lime from 3,964-84 feet in a test being deepened from the pool's old producing level. Test is in the R. D. Owens lands of the Owen Survey, Abstract 2245, and is in the midst of wells, some still producing and some off production, from the 1,900-foot level. First attempt by operators to tap a lower horizon was made last fall in deepening No. 4 Owens, an offset well to the new deep producer, but was completed from a pay section encountered at 2,420 feet. Operators will next move the rig 1 mile to the north, in the Aynesworth Survey, Abstract 1948, for another deep test.

Jack County

Discovery of a new shallow oil pool in Jack County, about 15 miles northwest of Jacksboro, was assured last week at a wildcat drilled by R. D. Compton, Fort Worth operator. The prospective pool opener, in the Robert Wilson lands of the H. H. Fuquay Survey, is estimated for 30 to 35 bbls. of oil daily from a total depth of 382 feet. The operator was scheduled to stake another location in the area by the close of the week.

Jones County

Two new wildcat tests were started during the week in Jones County, most active of West Central Texas counties at the present time. L. T. (Bobby) Burns has staked a location for a proposed 4,000-foot rotary wildcat about 6 miles southwest of Anson, test will be his No. 1 J. F. Mayfield, in the northwest corner of the north 160 acres of Section 24, Block 2, S.P. Survey.

The other Jones County wildcat is the S. B. Roberts test spudded in the southeast quarter of Section 36, Block 15, T.&P. Survey, 1 mile south of the Steffens pool and a similar distance east of the Lewis pool. Contract depth will be 2,500 feet.

WEST TEXAS FIELD COMPLETIONS

(24-hour tests)

Andrews County

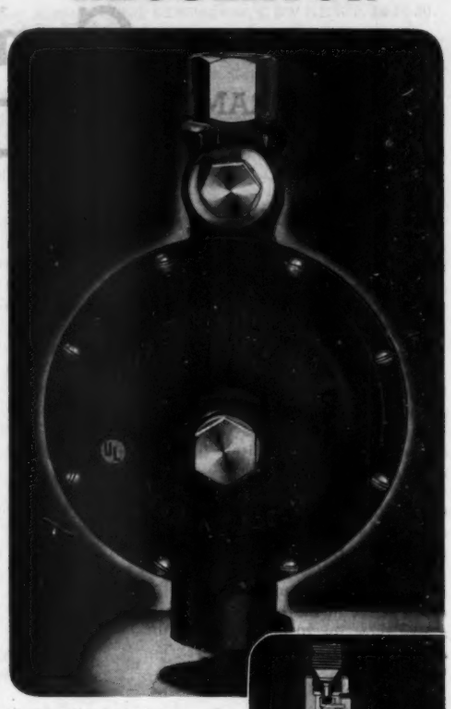
Honolulu Oil Co. No. 1-18 J. E. Parker, dry and abandoned at 4,803 feet. Humble Oil & Refining Co. No. 56 Means, 4,500-15 feet, 1,226 bbls. J. W. Tripplehorn No. 1 Munger-Nix, 4,405-4,526 feet, 146 bbls.

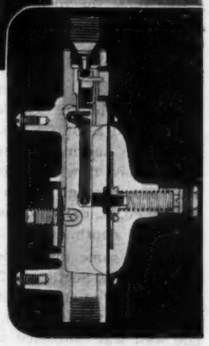
Ector County

Atlantic Refining Co. No. 40-D University, 3,390-3,659 feet, 2,016 bbls. Continental Oil Co. No. 5-C

(Continued on Page 117)

For POSITIVE CONTROL of Liquefied Petroleum Gases
The REGO 2400B REGULATOR





The RegO 2400B regulator was developed to meet the specific needs of liquefied petroleum gas systems. (It is NOT an adaptation of old types designed for other uses.)

The pressure setting made at the factory permits the installation of the RegO 2400B in either bottled or below-ground tank systems where the anticipated load does not exceed 60 cu. ft. per hour.

FUNCTION

Positive control, with the regulator in any position, covering the full range of tank pressures and delivering accurate and constant outlet pressures, makes the RegO 2400B the "heart" of every system.

CONSTRUCTION

Simple and rugged construction minimizes wear. Diaphragm material has proven its resistance to the action of gas by years of actual field service.

SERVICE

Readily accessible seat and nozzle permits easy replacement in the field without the use of special tools — regulator does not have to be taken apart.

SAFETY

A safety relief valve is built into the regulator as an integral part of the body — permitting the gas to be vented off in the event that pressures in excess of 1 lb. per square inch develop within the regulator.

Write for full details

The BASTIAN-BLESSING Company
288 E. Ontario St.
Chicago, Ill.

Rocky Mountain Area

Complete South Eunice Well for 1,440 Barrels of Oil Daily

By
T. R. INGRAM

DENVER, Colo., Feb. 13. — Drilling operations in the northern Rocky Mountain area were handicapped by a severe blizzard which sent temperatures far below zero. At South Park, Colorado, it was 30 degrees below. In Lance Creek, Wyoming, it was 25 below at last report and still dropping.

The old Boulder district in Colorado is coming in for a lease play where it is believed a new high has been found. The Mountain Fuel Supply Co. is preparing to make another test to determine the oil possibilities in the Hiawatha gas field in Moffat County. The Steamboat Springs Syndicate test in Routt County was abandoned.

The Ohio Oil Co. No. 6 Leo-O.P.C.-16, in Lance Creek, flowed 1,580 bbls. from the Leo sand in 18 hours. The Minnelusa Oil Corp. released location for an offset to Continental No. 1-B Dielman.

Montana had two completions and one new operation, all in Kevin-Sunburst. Santa Rita No. 3 Lander, south offset to the biggest well in Cut Bank, had gas and a show for 20 bbls. of oil in the Sunburst and is drilling to the Cut Bank sand.

NEW MEXICO

A big natural producer was completed in the South Eunice district in Lea County, New Mexico, at Texas Pacific Coal & Oil Co. No. 13-A State, C NE NE Section 11-22-36. It had initial flowing production of 1,440 bbls. of oil a day, flowing 60 bbls. in the last hour on a six-hour test, through 1-inch choke. Gas was estimated at 500,000 cu. ft. daily. Lime pay was found at 3,785-3,800 feet, total depth.

In the same area, Continental Oil Co. No. 4 State J-2, C NE NE Section 2-22-36, set 2-inch tubing at 3,833 feet, packer at 3,763 feet, and flowed 51 bbls. of oil an hour in two-hour test, with 1,040,000 cu. ft. of gas. The well was bottomed at 3,845 feet, with top of pay at 3,766 feet.

The third oil producer in the new Lovington field was completed at Repollo Oil Co. No. 1 State, Lease 182, C S half SE SW Section 31-16-37, more than 1 mile southeast of Skelly Oil Co.'s discovery oil well in the area and a similar distance northeast of Westmount Oil Co.'s gas discovery well. The Repollo well flowed 332 bbls. of oil in 18 hours, with 600,000 cu. ft. of gas. It topped pay at 4,610 feet, total depth 4,760 feet.

Newest test to be started in the Lovington area is Stanolind Oil & as Co. No. 2 State, C SE NW Section 1-17-36, one-half mile north of Stanolind Oil & Gas Co. No. 2 State, second oil producer in the area. Rotary was being rigged up.

Magnolia Petroleum Co. No. 4-M State, C SE NW Section 34-17-35, Vacuum field, topped pay at 4,590 feet, total depth 4,650 feet, and flowed 167 bbls. of oil naturally through open tubing in three hours.

Magnolia Petroleum Co. No. 23 State-Bridges, C NW SW Section 24-17s-34e, was bottomed at 4,700 feet, topped pay at 4,545 feet and after perforating casing at 4,559 feet flowed 175 bbls. of oil daily. The well was completed naturally.

Standard Oil Co. of Texas No. 4 State, Lease 4, C NW SW Section 27-17s-35e, reached total depth of 4,597 feet and topped pay at 4,355 feet. Two-inch tubing was set at 4,595 feet and the well washed down with 750 gallons of acid. In a one-hour test it flowed 54 bbls. of oil through open 2-inch tubing.

Italo Petroleum Co. No. 1 Carlson B-27, NE NW NE Section 27-25s-37e, was bottomed in sand at 3,364 feet, plugged back to 3,353 feet and flowed 65 bbls. of oil a day by heads. Top of pay was found at 3,285 feet.

George F. Getty No. 1-G State, NW NW NW Section 2-25s-37e, total depth of 3,582 feet, was plugged back to 3,502 feet and flowed 96 bbls. of oil daily from top of pay found at 3,383 feet. Gas gauged 3,000,000 cu. ft. a day.

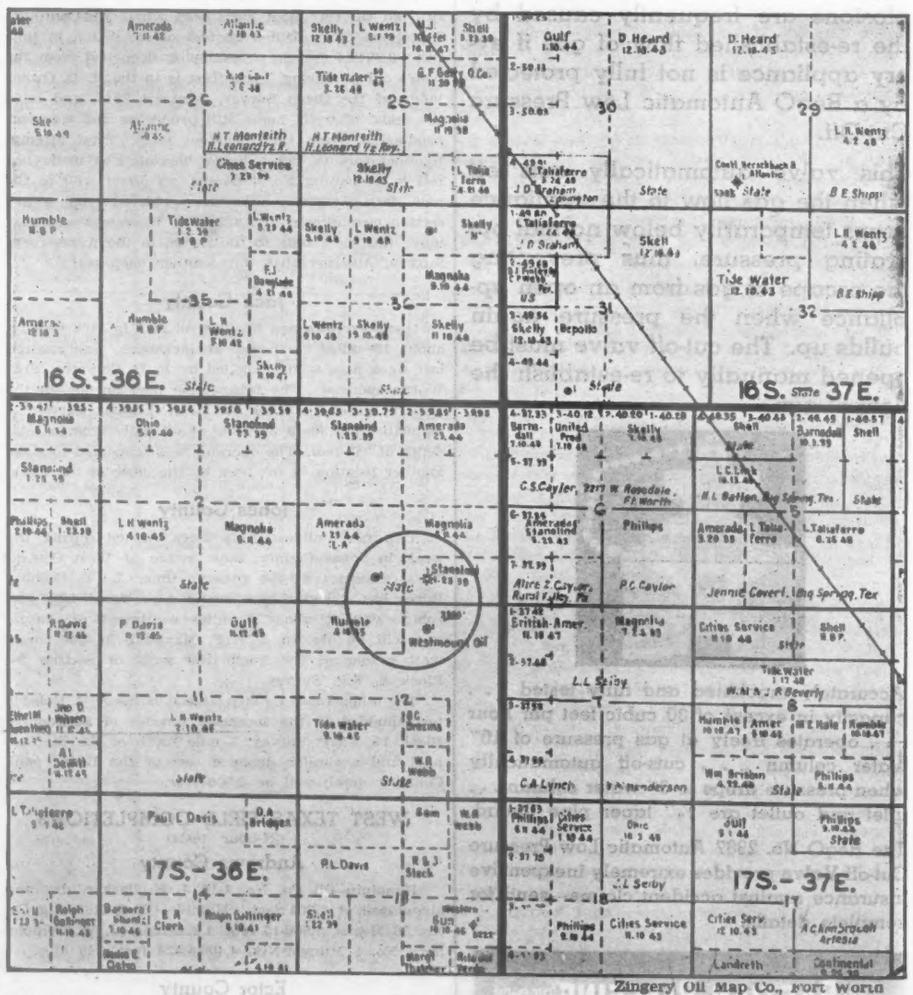
Humble Oil & Refining Co. No. 2-J State, C NW SW Section 19-17s-35e, flowed 12 bbls. of oil an hour through choke on 2-inch tubing set at 4,739 feet. Top of pay at 4,560 feet, total depth 4,765 feet.

Phillips Petroleum Co. No. 19 Santa Fe, C NW NE Section 35-17s-35e, had total depth in lime at 4,780 feet and was dry and abandoned. It is on the southeast edge of the Vacuum field.

One completion in Eddy County was Etz Brothers No. 5 State, SE NE SE Section 16-17s-30e. The well was bottomed at 3,300 feet, had top of pay at 3,214 feet, and after acidizing twice flowed 80 bbls. of oil daily through open tubing.

Lea County

Barnsdall Oil Co. No. 1 Humble-State, C NE SE Sec. 33-16-36. S.D.O. 4,997 ft.
Continental Oil Co. No. 1-A Sanderson B-14, C N½ NW NW Sec. 14-20-36. W.O.C. 1,443 ft.
Continental Oil Co. No. 1 State H-34, C SE SE Sec. 34-17-34. Drlg. 4,350 ft.
Continental Oil Co. No. 4 State H-35, C SE NW Sec. 35-17-34. T.D. 4,710 ft.; retreat. and F. 12 B.O.P.H.; tstg.
Continental Oil Co. No. 5 State H-35, C SW NE Sec. 35-17-34. M.I. rot.
Humble O. & R. Co. No. 1-K State, C SE SE Sec. 28-17-35. Drlg. 4,360 ft.
Humble O. & R. Co. No. 2-K State, C NW NE Sec. 32-17-35. Drlg. 3,060 ft.
Humble O. & R. Co. No. 3-K State, C NE SE Sec. 28-17-35. C.&P.
Magnolia Pet. Co. No. 1-O State, C NW SW Sec. 33-17-35. Drk.
Magnolia Pet. Co. No. 2-J State, C NW SE Sec. 22-17-34. Drlg. 4,130 ft.
Magnolia Pet. Co. No. 24 State-Bridges, C SW SW Sec. 13-17-34. Drlg. 4,685 ft.
Magnolia Pet. Co. No. 25 State-Bridges, C SE NE Sec. 26-17-34. Drlg. 3,675 ft.
Magnolia Pet. Co. No. 26 State-Bridges, C SE SW Sec. 26-17-34. R.U.R.
Maljamar O. & G. Co. No. 2-B Baish, C NE NE Sec. 27-17-32. T. D. 2,602 ft.; S.D. for D.P.
Maljamar O. & G. Co. No. 1-B Mitchell, C NE SE Sec. 20-17-32. T.D. 3,591 ft.; W.O.S.T.
Maljamar O. & G. Co. No. 6 Mitchell, C SW NE Sec. 20-17-32. Drlg. 3,980 ft.; swb. 30 B.O.P.D. while drilling.
Maljamar O. & G. Co. No. 1-B State, C SW SE Sec. 16-17-32. T.D. 4,125 ft.; retreating; est. 40 B.O.P.D.
Ohio Oil Co. No. 2 State-Staplin, C NE SW Sec. 30-17-35. Spdg.
Phillips Pet. Co. No. 12 Santa Fe, C NE SW Sec. 28-17-35. T.D. 4,700 ft.; R.U. C.O. unit.
Phillips Pet. Co. No. 15 Santa Fe, C NE NE Sec. 28-17-35. T.D. 4,700 ft.; C.O. 4,575 ft.
Phillips Pet. Co. No. 20 Santa Fe, C SW SW Sec. 27-17-35. Drlg. 2,847 ft.



Zingery Oil Map Co., Fort Worth

The third oil producer has been completed in the new Lovington field, Lea County, New Mexico, in C S half SE SW Section 31-16-37, northeast of the gas discovery and offsetting oil and gas wells, and more than a mile southeast of the oil discovery well

Phillips Pet. Co. No. 21 Santa Fe, C NE NE Sec. 33-17-35. W.O.C. 4,130 ft.
Phillips Pet. Co. No. 23 Santa Fe, C SW SW Sec. 26-17-35. Drlg. 3,798 ft.
Phillips Pet. Co. No. 24 Santa Fe, C NE NE Sec. 34-17-35. R.U.R.
Phillips Pet. Co. No. 25 Santa Fe, C NW SE Sec. 30-17-35. Drlg. 3,905 ft.
Phillips Pet. Co. No. 26 Santa Fe, C NE SW Sec. 29-17-35. Drlg. 850 ft.
Repollo Oil Co. No. 2 State, Lse. 197, SE NE SE Sec. 6-17-34. T.D. 4,590 ft.; R.U.S.T.
Shell Pet. Corp. No. 1-C State, C NE SE Sec. 24-17-34. T.D. 4,733 ft.; acdz. 8,500 gal.; tstg.
Shell Pet. Corp. No. 1-V State, C NE SE Sec. 21-17-35. Rng. tbg. 4,680 ft.
Standard Oil Co. of Texas No. 3 State, Lse. 3, C NE NW Sec. 22-17s-35. Drlg. 3,110 ft.
Stanolind O. & G. Co. No. 2 State, C SE NW Sec. 1-17-36. Drk.
Texas Co. No. 1-T State, C SE NE Sec. 25-17-34. T.D. 4,725 ft.; W.O. pump.
Twin Oil Corp. No. 1-D State, C SW NE Sec. 30-17-35. T.D. 4,700 ft.; R.U. pmp.
Fullerton Oil Co. No. 1-A Walker, C SW NW Sec. 18-18-32. Drlg. 1,155 ft.
Phillips Pet. Co. No. 16 Santa Fe, C NW SW Sec. 5-18-35. T.D. 4,750 ft.; C.O. 4,707 ft.
Great Western Prod. Co. No. 2 Bordages, NE SE NW Sec. 33-19-37. Drlg. 2,800 ft.
Shell Pet. Corp. No. 2 Foster, SE SW SE Sec. 34-19-36. T.D. 3,953 ft.; tst. 2,500,000 cu. ft.; acdz. and F. 24 B.F.P.D.; tstg.
Continental Oil Co. No. 2 Britt B-10, C W½ NW SW Sec. 10-20-37. Drlg. 2,937 ft.
Continental Oil Co. No. 4 Britt B-15, NW SW SW Sec. 15-20-37. Drlg. 3,100 ft.
Continental Oil Co. No. 3 Sanderson B-14, C E½ SE SW Sec. 14-20-36. Drlg. 2,862 ft.
J. M. Rush No. 4 State A-20, NW SE SE Sec. 20-20-37. Loc.
Texas Co. No. 16 Lieu-Lands, C NE SW Sec. 20-20-37. Drlg. 3,575 ft.
Aloco Oil Co. No. 1 Carson, C SW SE Sec. 28-21-37. T.D. 3,560 ft.; W.O.C.
Bryant-Drilexco No. 2 State, SE SW SE Sec. 12-21-35. Drlg. 1,195 ft.
Gulf Oil Corp. No. 7 McCormack, C NE SE Sec. 32-21-37. R.U.R.
Gulf Oil Corp. No. 2-B Mattern, C SE NE Sec. 31-21-37. C.&P.
Gulf Oil Corp. No. 4 Ramsey, C SE SE Sec. 35-21-36. W.O.C. 290 ft.
Magnolia Pet. Co. No. 1 Marshall, C SW NW Sec. 34-21-27. T.D. 3,758 ft.; shot and F. 208 B.O. in 7 hrs.
Francis C. Wilson No. 3 State, NW SE NE Sec. 7-21-35. T.D. 3,855 ft.; P.B. 3,827 ft.; to D.D.
Stanolind O. & G. Co. No. 4 Hill, C SW NE Sec. 6-21-37. Drlg. 100 ft.
J. C. Clower No. 1-B Manda, NE NE NW Sec. 28-22-37. T.D. 3,681 ft.; C.O. at 3,660 ft.; swb. 50 B.O.P.D.; will not flow.
Danglade & Clower No. 1-B Glier, C SE NW Sec. 33-22-37. Drlg. 3,550 ft.
Continental Oil Co. No. 4 Lockhart, B-1, C W½ SW NE Sec. 1-22-36. Drlg. 3,470 ft.
Continental Oil Co. No. 1 State F-1A, C W½ SE NE Sec. 1-22-35. Drlg. 480 ft.
Continental Oil Co. No. 5 State J-2, C SE SE Sec. 2-22-36. Loc.
Continental Oil Co. No. 5 State E-17, C W½ NW SW Sec. 17-22-36. Drlg. 610 ft.
Olean Pet. Co. No. 2 Farrell, SW SE SE Sec. 22-22-37. Drlg. 3,743 ft.
Skelly Oil Co. No. 7 Baker, C NW NE Sec. 27-22-37. Loc.
Skelly Oil Co. No. 5 Simms, C NW SE Sec. 33-22-37. Drk.
Texas Co. No. 2-B Fally, C SE SW Sec. 8-22-37. Rng. csg. 3,525 ft.
Texas Pacific Coal & Oil No. 14-A State, C NW NE Sec. 11-22-36. C.&P.
Two States Oil Co. No. 4-B Cole, C SW NW Sec. 16-22-37. Drlg. 3,000 ft.
Walter Donnelly No. 1 Davis, C SE NW Sec. 33-23-37. T.D 3,600 ft.; F. 11 B.O.P.D.
Great Western Prod. No. 2-B Leonard, C NW NW Sec. 32-23-37. C.&P.
R. Olson No. 1 Bilnebry, C SW SW Sec. 29-23-37. W.O.C. 3,450 ft.
Continental Oil Co. No. 4 Jack A-20, C SW NE Sec. 20-24-27. R.U.R.
Continental Oil Co. No. 2 Jack B-37, C SW NE Sec. 27-24-37. R.U.R.
North Shore Corp. No. 1 Woolworth, NE NE NW Sec. 33-24-37. T.D. 3,548 ft.; shot 3,470-3,548 ft.; S.S.O.
North Shore Corp. No. 2 Woolworth, SE SE NW Sec. 33-24-37. T.D. 3,534 ft.; T. pay 3,470 ft.
Parker Drlg. Co. No. 3 Erwin, C W½ NE SW Sec. 35-24-37. T.D. 3,460 ft.; F. 10 B.O. in 8 hrs.; est. 3,000,000 cu. ft. gas.
Phillips and Pure No. 5 Woolworth, C SW SE Sec. 33-24-37. C.&P.
Phillips & Pure No. 6 Woolworth, C NE NE Sec. 33-24-37. Drlg. 2,200 ft.
Schermerhorn Oil Co. No. 4 Woolworth, C NE SE Sec. 28-24-37. T.D. 3,530 ft.; F. 55 B.O. in 45 min.; est. 200 B.O.P.D.
Schermerhorn Oil Co. No. 5 Woolworth, NW SW NE Sec. 28-24-37. Drlg. 2,635 ft.
Sam Weiner No. 2 Woolworth, SW NW SW Sec. 33-24-37. T.D. 3,299 ft.; W.O.C.
Weir Drlg. Co. No. 3 Woolworth, NE SW SW Sec. 28-24-37. W.O.C. 1,455 ft.
Culbertson & Irwin No. 3 Henry, SW SW SW Sec. 26-25-37. M.I. mch.
Gulf Oil Corp. No. 6 Stuart, C NW NW Sec. 11-25-37. Drlg. 3,190 ft.
Italo Pet. Corp. No. 1 Indian Pet. Corp. B-5, NW NE NE Sec. 5-25-37. Drlg. 3,358 ft.
Italo Pet. Corp. No. 2 Indian Pet. Corp. B-5, NE SE NE Sec. 5-25-37. Drlg. 2,954 ft.
Richmond Drlg. Co. No. 1-A State, C NW SW Sec. 2-25-37. Drlg. 3,442 ft.; F. est. 100 B.O.P.D. through casing.
Richmond Drlg. Co. No. 2-A State, C SW SW Sec. 2-25-37. Drlg. 1,250 ft.
Sam Weiner No. 3 Smith, C N½ NE SE Sec. 4-25-37. Drlg. 3,455 ft.

Eddy County

Allen, Fair & Pope No. 1 Snowden, SE NE SE Sec. 36-17-29. M.I. mch.
Aston & Fair, Inc., No. 1 Hudson, C NE NE Sec. 18-17-31. Drlg. 1,300 ft.
Danciger O. & R. Co. No. 1-B Turner, CEL NE SE Sec. 17-17-31. T.D. 3,530 ft.; F. 32 B.O.P.D.; may shoot.
Hammond & Sons No. 1 Ployhar-State, SW SW SE Sec. 16-17-28. S.D.O. 1,364 ft.
J. O. and J. H. Hammond No. 1 Paris, NE NW NW Sec. 5-17-29. S.D.O. 25 ft.
English & Harmon No. 1 Stogner, C NW SE Sec. 31-17-31. T.D. 4,085 ft.; inc. in wtr.
P. B. English No. 1 Saunders, SE SE SE Sec. 13-17-27. T.D. 460 ft.; S.D. reprs.
Flint Prod. Co. No. 1-L Dexter, SE NW SE Sec. 15-17-30. Drlg. 3,234 ft.
Jim E. Hughes No. 2 Brooks, NE SW NE Sec. 19-17-28. Spd. and S.D. reprs.
F. G. Keyes No. 3 Red Gulch, NW NW NE Sec. 16-17-28. T.D. 1,221 ft.; drlg. 1,348 ft.
Ohio Oil Co. No. 4 State-McCallister, Sec. 25-17-34. W.O.C. 510 ft.
C. S. Powell No. 1 Smith, NW NW NE Sec. 6-17-29. S.D. reprs. 2,187 ft.
Red Lake Oil Co. No. 1 State, NE NE SE Sec. 20-17-28. Drlg. 1,810 ft.
H. J. Steinberger No. 1 Hastie, SE NE SW Sec. 18-17-38. T.D. 555 ft.; L., oil sd. 531-33 ft.; tstg.
Adkinson Oil Co. No. 1 Brainard, SE SW SE Sec. 5-18-27. Drlg. 1,370 ft.
Barney Cockburn No. 1 State-Graham, C NE NE Sec. 16-18-31. Drk.
Farmer & Tallmadge No. 1 Hubbell, NE SW Sec. 4-18-25. S.D.O. 380 ft.
Franklin Pet. Corp. No. 1 Ballard, NE NE SE Sec. 1-18-29. Drlg. 1,595 ft.
Green Bay Oil Co. No. 1-A Johnson, C SE SE Sec. 11-18-31. Drlg. 2,875 ft.; S.S.O.
Yates et al No. 1 Yates, C NW SW Sec. 6-18-30. T.D. 2,874 ft.; S.I. for storage.
Harvey E. Yates No. 1 Travis, NE SE SE Sec. 6-18-29. Drlg. 1,475 ft.
Carper Drlg. Co. No. 1 Quillen, C NW NE Sec. 12-19-31. Drlg. 1,725 ft.
R. C. Underwood No. 1 Quillen-Bruce, NE NE SE Sec. 4-19-31. T.D. 3,001 ft.; cmtg. 7-in.
Martin Yates, Jr., No. 1 Bowers, SW SE SE Sec. 31-19-27. T.D. 1,180 ft.; est. 25-40 B.O.P.D.; tstg.
Trojan Oil Co. No. 1 Grant, SW SW NE Sec. 33-20s-25e. S.D.O. 408 ft.
C. F. Ingram No. 1 Page, NE NE SW Sec. 15-21-28. T.D. 2,978 ft.; fsg.
Barnett Oil Dev. Co. No. 1 King, C NW SE Sec. 23-26-30. U.R. 10-in. 1,712 ft.

Chaves County

Nay Hightower No. 1 Billingslea, C SW NE Sec. 28-11-30. Drlg. 2,770 ft.
E. J. Fisher No. 1 Foster, C NW NW Sec. 7-15-26. T.D. 1,281 ft.; S.D.O.

De Baca County

N. E. Woods No. 1 Jones, C NE SW Sec. 17-4n-20. T.D. 620 ft.; S.D. rprs.
James D. Ward No. 1 Summers, SE NE SW Sec. 15-4n-24e. T.D. 680 ft.; S.D.O.

Roosevelt County

Shell Pet. Corp. No. 1 Harwood, C S½ SE SE Sec. 27-7s-35e. Drlg. 5,554 ft.

NORTHWEST NEW MEXICO

Bernalillo County

Norins Realty Co., Inc., No. 2 Pajarito, Sec. 22-9n-1e. Drlg. 1,090 ft.

4 TIMES More Footage Drilled with GATKE BRAKE LINING, Says this DRILLING CO. Superintendent

Gatke Corporation
Chicago, Illinois

Dear Sirs:

I am writing this letter as a compliment to the Gatke Corporation for the superior performance of their brake lining.

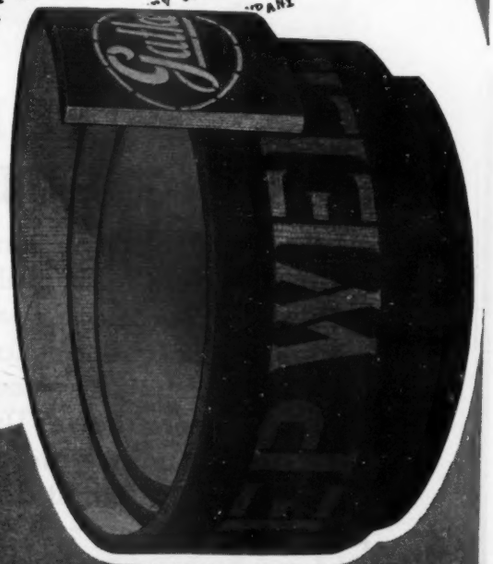
In the past on other makes of braking material we have only been able to get one well in the Shuler district, where we are drilling to the approximate depth of 7700 feet without the use of hydromatic brakes. After using Gatke lining we averaged five wells, estimating 40,000 feet per set, approximately fifty round trips per well, including all cores, reaming, etc. and each well setting 100 feet of sixteen inch casing, 2000 feet of ten and three-quarter inch casing and 7700 feet of seven inch casing. This is an estimate of five wells.

I also wish to state that we have increased our efficiency with your brake lining over other makes 66-2/3% and now have seven rigs running, all equipped with Gatke brake lining. I sincerely hope you continue to improve and sell this brand of lining, and you will always have a satisfied customer.

(NAME ON REQUEST)

Very truly,

COMPANY



FIVE deep wells drilled where but ONE was drilled before! 250 round trips with always dependable braking power! No wonder this drilling contractor has been quick to install Gatke DEEP-WELL Woven Brake Lining on all seven of his drilling rigs.

His experience is typical. Drillers everywhere will tell you that nothing matches DEEP-WELL Woven for giving smooth pick-ups and feed-offs at all depths — or for long service life.

Furnished in all widths and thicknesses for application to both production and drilling machinery.

Also available in blocks.

GATKE CORPORATION
228 N. La Salle St. — Gatke QUALITY — Chicago, Ill.

Norins Realty Co., Inc., No. 2 North Albuquerque, NE SE NW Sec. 10-11n-4e. S.D. 4,550 ft.

McKinley County

S. Dysart No. 3-A Govt., NE NW NE Sec. 14-14n-10w. Cmtd. 12½-in. 1,320 ft.; 100 ft. sat.
Pet. Products Co. No. 3 Santa Fe, NE NW Sec. 1-17n-9w. T.D. 1,590 ft.; rng. csg.

Rio Arriba County

Oil City Pet. Co. No. 2 Wirt-Sanchez, C Sec. 12-31-2e. M.I.

San Juan County

The Continental Oil Co. No. 86 Rattlesnake, near C W half NE Section 2-29n-19w, Rattlesnake pool, was dry and abandoned at 905 feet. Location was released for No. 87 Rattlesnake.

Continental Oil Co. No. 87 Rattlesnake, C E½ NW NE Sec. 2-29n-19w. M.I.M.; (first report).
San Juan O. & G. Co. No. 2 Cassidy, NW NW SW Sec. 18-29n-11w. Drlg. 850 ft.
Kutz Deep Test, Inc., No. 1 Govt., C NW NW Sec. 28-28n-10w. Drlg. 350 ft.
Jack Amenda No. 1, NE NE Sec. 14-29n-13w. Drlg. 625 ft.
Al Greer No. 2 fee, SW SE SW Sec. 10-30-11w. Drlg. 840 ft.
Anna Oil Corp. No. 6 Govt., SW NE NE Sec. 33-30n-11w. S.D. 1,885 ft.; W.O. csg.; S.O. in Farmington sd. but will D.D. to Picture Cliff.
Ted Whetstine No. 1 McGee, NW NW Sec. 20-30n-11w. S.D. 434 ft. for mat.
Bullock & Noland No. 1 Bunce, SW SE Sec. 24-29n-1w. S.D. 965 ft. (C.D.).

Valencia County

Joiner Oil Corp. No. 1 San Clemente, C NE SE Sec. 23-7n-1e. Drlg. 2,600 ft. in valley fill.
C. A. Groeber et al No. 1 Fuqua, NE NE Sec. 19-5n-3e. Res. at 840 ft., Feb. 1.

COLORADO

Archuleta County

Boone Dev. Co. No. 1 Newton, SE NW SE Sec. 18-33n-1e. Drlg. below 800 ft.
Pagosa Oil & Dev. Co. No. 1 Macht, C Sec. 32-36-1w. T.D. 2,460 ft.; fsg. tools; through Dakota series.
Axelind Oil Co. No. 1, Sec. 11-32n-2e. Drlg. below 700 ft.

Boulder County

The Boulder district, 30 miles northwest of Denver, which has received attention by the oil industry at intervals over a period of 38 years, again is the scene of leasing activity. One block of leases were put on record last December and recently several parties have been taking acreage, although most of it has not been recorded. The activity this time is mostly between Louisville and Base Line Lake, slightly to the south and east of the old Boulder field. Early in 1937 the Amerada company had a seismograph crew in the area and since then at least one other crew has been reported making surveys. Predecessors of the present Continental Oil Co., the old Midwest Refining Co., the Repollo Oil Co., the Ohio Oil Co. and several local companies have drilled tests in the general area from the foothills to the vicinity of Lafayette. At present the old Boulder field has less than a dozen producing wells which are pumped at intervals and average around 30 bbls. per day for the field. The present activity is reported to be based on new geological evidence pointing to a local high which has never been drilled, but for which prospects are favorable for a deep test next spring.

Reynolds & Roher No. 1 Thomas, SW SW Sec. 17-1n-70w. T.D. 750 ft.; tstg. S.S.O. in Hygiene.

Fremont County

Stanley Thomas No. 1 Rickwalt, SE SE Sec. 2-19s-70w. S.D. 2,460 ft.

Garfield County

Roaring Fork Oil Co. No. 1 Patterson, C NE Sec. 36-7s-88w. S.D. 2,008 ft. for winter after W.S.O. with 5⅛-in. at 1,757 ft.

Huerfano County

J. W. Tomkins & Sons No. 2 Presser, SE SE SE Sec. 3-29s-69w. S.D. 328 ft.

La Plata County

N. Spatter No. 1-X Bryce, SE SW SW Sec. 31-33n-9w. Drlg. below 2,275 ft. in gr. L.; 8¼-in. at 2,220 ft.; coal 2,250-55 ft.

Las Animas County

Hulme-Johnston-Allison No. 1 Azar, SE SE NW Sec. 27-34s-58w. T.D. 1,285 ft.; W.O. 10-in.; S.G. 1,279-83 ft.

Logan County

West Plains Dev. Co. No. 1 Sheldon, SE NW SE Sec. 3-10s-55w. S.D. 190 ft. in 20-in. hole.

Moffat County

The Mountain Fuel Supply Co. is building rig over its No. 1 Florence Wilson, NE SW NE Section 22-12n-100w, in the Hiawatha field, preliminary to deepening the hole to a sand which produced oil in the Kuykendall No. 1 well, in the NE NE SE of Section 22, at 2,472-84 feet on a 60-day test last fall. The purpose of the deepening operation is to determine the extent and porosity of the oil sand. No. 1 Wilson is the gas discovery well for the field and blew in at 2,220 feet in 1926 for 45,000,000 cu. ft. per day, estimated, with a pressure of 840 pounds. It was drilled by William A. Myers, of Denver, for W. T. Morris and associates, and the discovery led to the development of the field and construction of a pipe line to Salt Lake City. The well showed green oil around the fittings when shut in. In 1932 it went off production due to caving ground. It was cleaned out and deepened to 2,232 feet where it showed for 1,000,000 cu. ft. of gas and approximately 15 bbls. of oil per day. It was continued on production as a gas well. Last fall No. 1 Kuykendall tested the sand at 2,472-84 feet in which it averaged 85 bbls. per day for 60 days. It was then shut in. The oil has a gravity of 46.9 A.P.I. scale. On a recent analysis it showed a gasoline recovery of 88 per cent at a temperature of 392°, with 11.5 per cent residue, and an ultimate recovery of 89.7 per cent at 415°. It has a good octane rating. It is reported, but not confirmed, that the company has under consideration the marketing of Hiawatha oil in Utah next spring. This will involve trucking the crude 42 miles from the field to the Union Pacific Railroad. The Hiawatha production comes from Wasatch beds of Tertiary age. The sands are lenticular both in this field and Powder Wash, to the east, and present operations are to obtain more definite information as to the extent of the productive area and data upon which to base future plans for marketing the oil.

Mountain Fuel Supply Co. No. 1 Wilson, NE NW NE Sec. 22-12n-100. T.D. 2,232 ft.; bldg. rig. to D.D.
C. R. Privett No. 1 Sutton, NE NE SW Sec. 1-5n-96w. T.D. 1,145 ft.; fsg.; U.R. lug.
Mackinnie Oil & Drlg. Co. No. 1 Coles, SW SW SE Sec. 1-3n-92w. Drlg. 3,075 ft. in dry hole; S.S.O.

Montezuma County

McElmo Oil Co. No. 1 West, NE NW NW Sec. 31-36s-17w. S.D. 4,917 ft.

Park Coun'

South Park Oil Co. No. 1 Lemar, NE NE SE Sec. 34-11s-75w. Drlg. 6,777 ft.; 30° below zero.

Prowers County

Continental Oil Co. No. 1 Ruby, C NE NW Sec. 31-21s-44w. T.D. 5,437 ft. in white L.; rmg. at 5,435 ft. to lower 7-in.

Pueblo County

C. E. Puckett No. 1 Barber, NW Sec. 35-21s-66w. S.D. 870 ft. for csg.
Eden O. & G. Co. No. 1 Horse Creek, SW SE Sec. 29-19s-64w. T.D. 2,060 ft.; U.R. 6¼-in. to bttm.

Rio Blanco County

Buford Oil Co. No. 1 Govt., C SW SW Sec. 16-1n-91w. Drlg. blk. sh. 3,625 ft.

Routt County

Steamboat Springs Drilling Syndicate No. 1 Brown,

LOWER FIRST COST
LESS MAINTENANCE

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General Power Conversions of Ford V-8 Engines have given hundreds of thousands of hours of constant, economical operation. Engine and engine parts exchange plan combined with low initial cost of unit, assures economical maintenance. General Power Units using Ford 60, 85, and 95 h.p. Engines are available in SINGLE, DUAL OR TRIPLE belt driven units for drilling purposes.

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C NW NE Section 1-6n-86w, a test of the Steamboat Springs high, was abandoned without plugging at 1,790 feet. It had water in the Sundance, which was topped at 1,620 feet.

WYOMING

Big Horn County

Frank S. Scott No. 1 Robertson, SE SE SE Sec. 6-54n-93w. Spd. to 14 ft. and S.D. to comp.; R.U.
Libby-Keoughan Interests No. 1 Sheets-Govt., SE NE SE Sec. 9-55n-96w. S.D. 3,430 ft.
A. L. Rankin No. 1 Karjajla-Rankin, C SW NW Sec. 10-54n-94w. Drlg. 635 ft.
Prescott & Mileski No. 1 Govt., NE NW SW Sec. 15-1n-93w. S.D. 1,190 ft.; repairs.
Clifford S. Johnson No. 1 Johnson, CEL NW NW Sec. 24-51n-93w. Drlg. 400 ft.
Joan Oil Co. No. 1 Howell, NE NW NE Sec. 32-55n-97w. S.D. 2,718 ft.

Campbell County

Fyre & Kreiner No. 2, CSL NW NW Sec. 6-50n-72w. Landed 5½-in. on bttm. at 823 ft. and S.D.

Carbon County

Sinclair-Wyo. Oil Co. No. 3-A Mahoney Unit, C SW NE Sec. 34-26n-88w. Drlg. 2,210 ft.
Ohio Oil Co.-California Co. No. 7 Union Pacific-Johnson, CEL NE SW Sec. 23-21n-79w. T.D. 5,836 ft.; dry in Sundance; P.B. to 5,383 ft.; tstg. Dakota.
Producers Oil Co. No. 1 Lake Valley, 200 ft. CEL Sec. 14-20n-88w. S.D. 1,916 ft.

Converse County

Blue Ridge Oil Co. No. 1 Prokesh, SW NW SE Sec. 29-32n-69w. Cmtd. 10-in. at 330 ft. and S.D.

Lincoln County

H. C. Harris et al No. 1 Govt., SE NW NW Sec. 23-21n-117w. T.D. 1,096 ft.; fsg. tools.

Natrona County

General Pet. Corp. No. 2 State, NW SE NE Sec. 16-35n-77w. Drk.; foundations run.
General Pet. Corp. No. 1 State, NW NE SE Sec. 16-35n-77w. Cg. 8,108 ft. for Lakota expected at 8,145 ft.; Dakota topped at 8,082 ft.; hd., mostly sh.

Niobrara County

The Ohio Oil Co. No. 6 Leo-O.P.C.-16, NW NE SW Section 35-36n-65w, an inside well in the Leo sand pool, flowed 1,580 bbls. in 18 hours from the Leo sand at a total depth of 5,576 feet. Top of Leo was at 5,530 feet, where the 7-inch was cemented. Rotary table elevation, 4,470 feet.

The Adams Oil & Gas Co.-Felmont Corp. No. 1 Baker is still swabbing and testing.

The Minnelusa Oil Corp. has released location for its No. 1 H. & M., on Lease 5, NW NE SE Section 7-35n-65w, a south offset to the Continental Oil Co. No. 1-B Dielman, a producer in the Leo sand.

Minnelusa Oil Corp. No. 1 H. & M.-5, NW NE SE Sec. 7-35n-65w. C.&P.; (first report).
Argo Oil Co. No. 3 Ford, SW SW NW Sec. 33-36n-65w. T.D. 4,045 ft.; R.U.R. to D.D.
Ohio Oil Co. No. 1 Leo-O.P.C.-7, NW NW SE Sec. 35-36n-65w. T.D. 5,641 ft.; cmtg. off prod. sd. to D.D.
Ohio Oil Co. No. 5 Rohlff, 100 ft. E of C E½ Sec. 32-36n-65w. R.U.R.
Continental Oil Co. No. 14 Tom Bell, C NW SW Sec. 34-36n-65w. Drlg. 3,909 ft.; top first Sundance 3,779 ft.
Continental Oil Co. No. 3 Apex-4, SE SW NW Sec. 35-36n-65w. T.D. 5,478 ft. in sat. Leo sd.; top 5,449 ft.; 7-in. cmtd. at 5,451 ft.
Argo Oil Co. No. 9 Elliott, NW SE SE Sec. 5-35n-65w. T.D. 3,979 ft. in sat. sd.; 7-in. cmtd. 3,931 ft.; tstg.
Ohio Oil Co. No. 6 Leo-O.P.C.-16, NW NE SW Sec. 35-36n-65w. T.D. 5,576 ft.; prep. to test.
F. F. Hintze et al No. 1 Wright-Govt., NW NW SE Sec. 30-36n-63w. T.D. 3,300 ft.; cmtg. to regain circ.
J. E. Manning No. 1 Hewitt-Govt., NW SW SW Sec. 4-35n-65w. Loc.
Cow Gulch Oil Co. No. 1 MaGoon, NE NE Sec. 33-35n-64w. T.D. 2,100 ft.; C.O. to D.D.
Fall River Roy. & Prod. Co. No. 1 Govt., CSL SE SE Sec. 35-40n-61w. T.D. 1,000 ft.; rec. collapsed pipe; rerng. 12½-in.
H. D. Moore et al No. 1 Bergrem, NW Sec. 23-35n-63w. Drlg. 1,900 ft.
Adams O. & G. Co. No. 1 Baker, NW NE SW Sec. 8-35n-65w. T.D. 5,636 ft.; tstg.

Park County

Dry Creek Oil Co. No. 1 State, C NE NW Sec. 16-50n-100w. S.D. 200 ft.
E. J. Preston No. 1, SW SW Sec. 26-58n-98w. M.I.M.
Blue Ridge Co. No. 1 Mau, NE NE SW Sec. 25-58n-98w. Cmtd. 12½-in. 100 ft.; S.D.
Resolute Oil Co. No. 2 State, C SW SW Sec. 16-57n-101w. S.D. 8,690 ft.

Platte County

Bill Griffin et al No. 1, NE SE NE Sec. 18-30n-67w. S.D. 550 ft.

Sublette County

Texas Co.-Frontier Pet. Co. No. 1 Unit, SE SE SW Sec. 1-28-11w. T.D. 6,247 ft.; C.O.
Yellowstone Oil Co. No. 1, 200 ft. N of S line of the H. L. Budd rnh., SE SE Sec. 31-13n-112w. S.D. 10 ft.
Progressive Oil Co. No. 1 Haddenham, C NE SE Sec. 21-28n-113w. S.D. 835 ft.
Wyoming Pet. Corp. No. 1 Budd, C NE NE Sec. 10-29n-113w. T.D. 1,695 ft. mudded in; prep. to run csg.

Sweetwater County

Sinclair-Wyo. Oil Co. No. 81, SW NW NW Sec. 11-26n-90w. T.D. 2,059 ft.; tstg.
Sinclair-Wyo. Oil Co. No. 82, NE SW SW Sec. 11-26n-90w. Drlg. 1,317 ft.

Weston County

T. R. Ragland-Osage Trust No. 3 Government, Dewey district, 1½ miles north of the discovery, tested 25 bbls. on the swab from the Leo sand at 2,477-2,502 feet and may drill deeper before completing.

T. R. Ragsdale-Osage Trust No. 3 Govt., C NW SW Sec. 31-42n-60w. T.D. 2,502 ft.; tstg.
Kroker et al No. 2, CNL NE NW Sec. 31-47n-63w. M. I.M.
Whedon et al No. 1, C SW NE Sec. 21-46n-64w. Drlg. below 3,474 ft.
Lem Johnston No. 1, NW SW Sec. 24-44n-63w. Drlg. 1,700 ft.
W. A. Lease et al No. 1, SW SW Sec. 36-45n-63w. M.I.M.

MONTANA

Big Horn County

Buzetti & Corkins No. 1, NE NW Sec. 23-1s-23e. Some mat. on ground.

Blaine County

Walter Drought No. 1 Stam, CSL SW SE Sec. 20-31n-18e. Drlg. 950 ft.; (formerly G. R. Teeters).

Carbon County

Valentine M. Kirk et al No. 1 Robinson, SW SW NW Sec. 2-7s-21e. Cmtd. 10-in. at 2,021 ft. and S.D. until spring.
Alex Beaton No. 1, CSL SE SE Sec. 23-6s-23e. T.D. 1,580 ft.; landed 6¼-in. on bttm.
R. C. Tarrant No. 2, SE NW Sec. 4-6s-18e. S.D. 3,130 ft.; S.O. in Dakota at 2,937 ft.
Henderson Prod. Co. No. 1-H-11 Elk 11, SE SE NW Sec. 35-9s-23e. S.D. 1,810 ft.
Miracle Oil Co. No. 2 Govt., CWL NE SE Sec. 4-6s-23e. S.D. 2,381 ft.

Cascade County

E. B. M. Oil Co. No. 1 Betts, CSL NW SE Sec. 34-18n-4e. S.D. 1,250 ft.

Choteau County

Security Pet. Corp. No. 1 Johnson, C NE Sec. 23-26n-3e. S.D. 1,991 ft.; S.D. for 6⅝-in.; Sunburst 1,935-53 ft.

Dawson County

Frank C. Hughes No. 1 fee, NW NE SE Sec. 5-14n-55w. Drlg. 1,065 ft.

Daniels County

White Tail O. & G. Co. No. 2 Wiley, NW NW NW Sec. 10-36n-50e. Drlg. 1,928 ft.

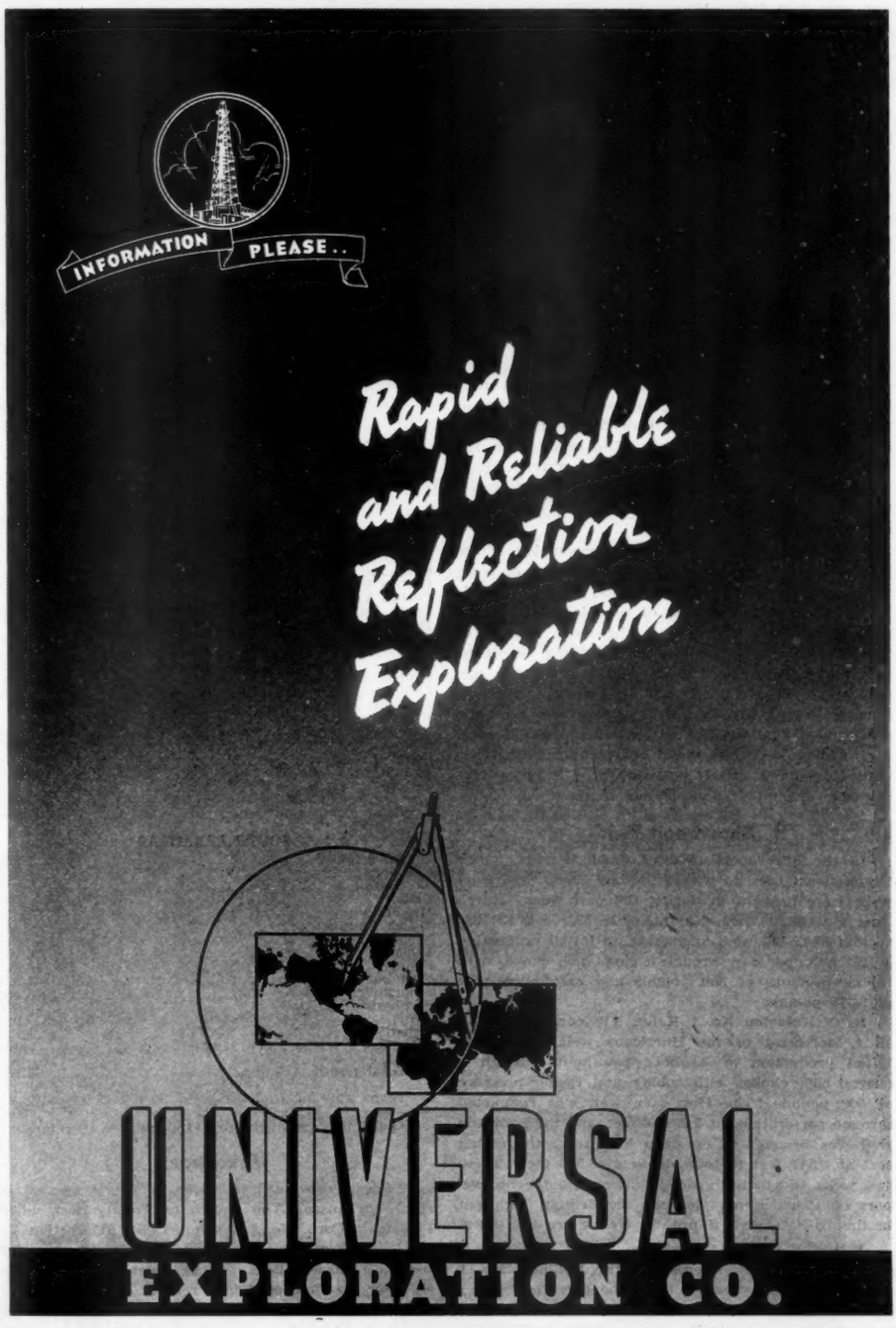
Fergus County

Baughman & Singley No. 1 Skaggs, C NW SW Sec. 7-15n-20e. S.D. 1,080 ft. (C.D.); in lower Quadrant.
Emmons et al No. 5 Stocker, SW NW SW Sec. 24-22n-18e. S.D. 960 ft. for winter.

Glacier County

Santa Rita Oil & Gas Co. No. 3 Lander, one-fourth of a mile due south of its No. 1 Lander, the largest producer ever completed in the Cut Bank field, is drilling in the Cut Bank sand at 2,895 feet. It topped

(Continued on Page 129)



North Louisiana, Arkansas

By
GEORGE WEBER

Pine Island Area New Pool Has Large Well in Woodbine

SHREVEPORT, La., Feb. 13.—Continued interest in South Arkansas wildcats, and a revival of activity in the old Pine Island field of Caddo Parish, Louisiana, marked the week's developments in the tri-state district. Drilling generally through the proven fields has declined markedly during the past several weeks, and only two fields, Cotton Valley and Shreveport, remain at their former active levels.

Pine Island Interest

Following the completions of a small oil well in the Pine Island sector of Caddo Parish several weeks ago, interest of local operators was directed to further prospects of Woodbine production in that immediate area. The original well in the recent revival was the Colonial Corp. No. 1 Thigpen & Herold, which flowed oil for a time, and then flowed salt water and ceased oil production. An east offset test was staked by the Burnham Drilling Co., as No. 1 Gray, and this week the test had topped the sand at 2,459 feet. and was running casing to a total depth of 2,481 feet.

In the same area, in the past week, the L. H. Mahon No. 1 Henderson, SW cor., Section 27-22-16, topped sand at 2,473 feet and after setting 5½-inch casing at 2,473 feet, with total depth at 2,481 feet, brought the well in making an initial production of 153 bbls. per hour through a three-fourths inch choke. No pressure gauges were run. The crude from the Woodbine sand in this well runs 45.1 gravity. It is at present being trucked from the lease to the nearby refinery of the Rodessa Oil & Refining Co. in the Shreveport area.

The relatively shallow depth of production in the newly opened pool has attracted a number of operators, and the result of the Mahon completion this week has been the staking of nine locations in the area immediately surrounding the well. Several of these locations are slated for early drilling, according to reports. Production of the Mahon well, and success of the Burnham test will be watched with considerable interest by the operators concerned with the area, and a continuation of production without pressure decline, or salt water encroachment, together with subsequent offset successes may bring a considerable amount of new drilling to the field.

Shreveport Field

In the Shreveport field of Caddo Parish, which has been extended to within the city limits, two good wells were brought in during the past week. Hurricane Petroleum Corp. No. 1 North, NW cor. SE NE Section 34-18-14, came in making an initial production of 191 bbls. per day through a 20/64-inch choke, with tubing pressure of 800 pounds and casing pressure of 1,375 pounds.

R. O. Kniveton No. 1 Kahn, NW cor. Section 35-18-14, northeast of the Hurricane well, gauged an initial production of 33 bbls. per hour through a quarter-inch choke, with tubing and casing pressure at 500 pounds. The Hurricane well was completed through perforations at 5,537-40 feet, and the Kniveton well was brought in on open hole from the casing seat at 5,547 feet to total depth of 5,563 feet. These two wells add to the growing interest in the Shreveport field, which may become the drilling high-spot in the tri-state area if present trends are continued.

A third test, approaching the pay in the field, is currently attracting interest. Harry Hanbury No. 1 Sample, an east offset to the same operator's No. 1 Lowe, which extended the field to the northeast several weeks ago, is drilling below 5,250 feet, and is due to core shortly, according to reports. This well will give further information on the Pettit lime characteristics to the east.

A De Soto wildcat, S. S. Alexander No. 1-A Stoll in Section 5-12-16 is being tested. The well, which found a show of oil in January at 2,984-3,046 feet, was deepened and a string of 5-inch casing was set on bottom at 3,145 feet. Drilled out to 3,050 feet, the casing was perforated at 3,000-44 feet and production tests started.

Cotton Valley

A good oil well was completed several days ago in the south section of the Cotton Valley field of Webster Parish. The Woodley Petroleum Co. No. 1 J. O. Couch, C NW SW Section 36-21-10, made an initial gauge of 405 bbls. per day through a three-sixteenths inch choke, with tubing and casing pressures of 1,475 and 1,530 pounds respectively. The gravity of the oil is 40.5 degrees and the gas-oil ratio, 885 to 1, is very low in comparison with other wells in the field.

To the north, in Webster Parish, the Magnolia Petroleum Co. is reaming down at 9,155 feet in the No. 4 Branton, a deep test in the old shallow Shongaloo gas field. The test is near the producing level of the same company's No. 1 Sexton Unit, a gas distillate well. No shows have been reported in the Branton No. 4 at the end of the week.

Production by Fields

Estimated daily gross production all companies week ending February 11:

NORTH LOUISIANA

	Bbls.
Bellevue	640
Caddo light	4,055
Caddo heavy	2,655
Converse	510
Cotton Valley heavy	95
Cotton Valley light	*11,170
Cress Lake	2,825
De Soto and Red River	1,125
Elm Grove	240
Haynesville	2,845
Holly	70
Homer	2,680
Lisbon	7,840
Pleasant Hill	110
Rodessa	28,080
Sarepta-Carterville	†440
Sligo	1,345
Sugar Creek	270
Urania	2,620
Zwolle	2,765
Total North Louisiana	72,380

SOUTH ARKANSAS

Buckner	1,350
Champagnolle	1,890
El Dorado	1,715
Lisbon	250
Magnolia	2,815
Miller County	340
Nevada	615
Rodessa	5,155
Schuler	18,860
Smackover light	1,925
Smackover heavy	15,180
Stephens	510
Troy	970
Urbana	1,110
Village	465
Total South Arkansas	53,150

Texas side of Rodessa field 30,850 bbls. daily.

*4,485 bbls. is distillate. †150 bbls. is distillate.

Arkansas

Wildcats continued to attract principal interest in South Arkansas. The Lafayette County test, Shell Petroleum Corp. No. 1 Warren, C SE SE Section 13-16-24, was swabbing below 3,550 feet, after acidizing with 3,000 gallons at 7,284 feet. The well was showing less oil at latest reports, after the fluid level had risen 500 feet, but no salt water had been reported. Located on a structure in the Stamps area, the test found porosity and saturation in the Smackover lime, but a low permeability prevented early completion as a commercial producer. It is reported that the test will be acidized several times more in an effort to make a commercial producer and a discovery well.

In Ouachita County, the Stephens test, Deep Rock Oil Corp. No. 1 Wesson, SE cor. NE Section 23-15-19, was drilled to a total depth of 6,053 feet and a string of 5½-inch casing was set at 6,038 feet.

Calhoun County's wildcat test, the former C. E. Murdock No. 1 Southern Kraft Corp., has been taken over by J. R. Lockhart of El Dorado, and drilling will be resumed shortly from the present shutdown depth of 3,291 feet.

The Magnolia field of Columbia County has two tests on the pay, and the new completions, slated for the next few days, will add to the information on that potentially important production area.

New York-Penna. Gas Fields

COUDERSPORT, Pa., Feb. 13.—The single completion in the New York-Pennsylvania gas fields during the past week was the No. 2 well on the George Hotaling farm in Woodhull Township, Steuben County, New York. This well was completed by G. L. Cabot, Inc., at a total depth of 3,937 feet with an initial open flow of 1,621,000 cu. ft., boosted from 1,521,000 cu. ft. by a 20-quart shot. Top of the Oriskany sand was at 3,918 feet.

Two other wells are drilling in this township: Sylvania Corp. at 1,625 feet on the Della Calhoun farm and New York State Natural Gas Co. at 2,815 feet on the Meade farm. In addition, New York State Natural Gas Co. is rigging up for a No. 3 on the Parks farm.

None of the three locations in the new Cameron Township, Steuben County, area have yet been spudded in. New York State Natural Gas Co. is rigged up on the William Preece farm, the elevation of this test being 1,701 feet; Belmont Quadrangle Drilling Co. is building the rig on the Andrew Taft farm and Hanley & Bird have an idle location on the Lloyd Hall farm.

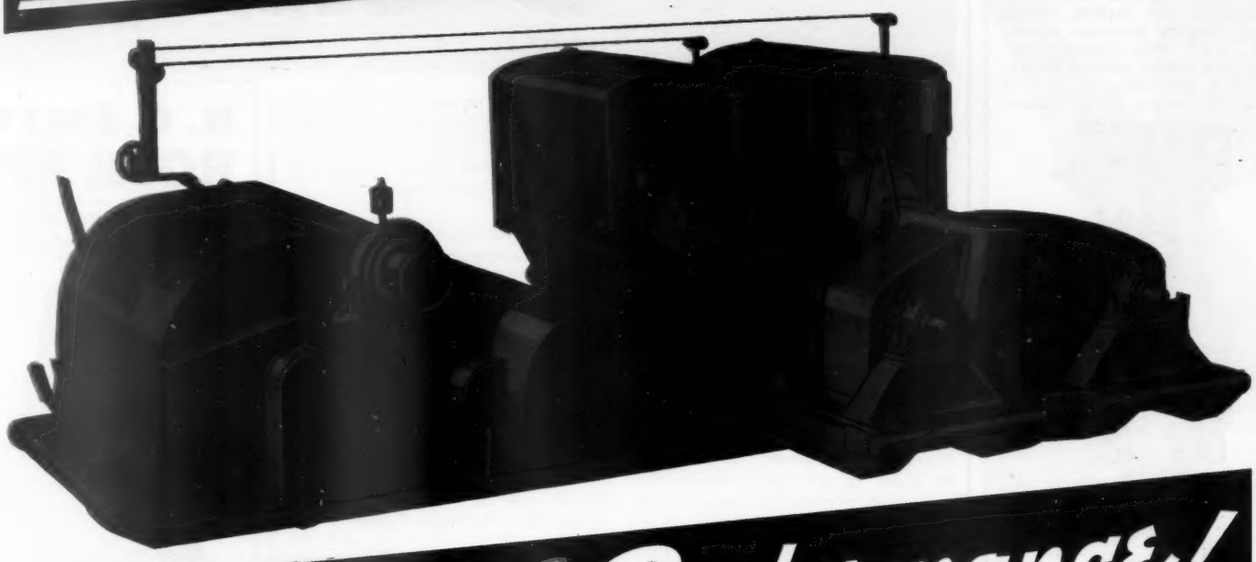
Remaining Steuben County operations are in Greenwood Township, where G. L. Cabot, Inc., is drilling at 3,487 feet on the Ray Scribner farm after topping the Tully at 3,478 feet, and is shut down after moving in on the L. Highland farm, and in Troupsburg Township New Penn Development Co. and others are drilling at 360 feet on the E. G. Cady farm.

The Empire Producing Co. is shut down at 4,750 feet on the No. 2 on the Floyd Wilson farm in Willing Township, Allegany County, waiting for cement to harden on the whipstock. Cunningham Natural Gas Co. is drilling at 4,316 feet on the William Shear No. 2, and Belmont Quadrangle Drilling Co. is drilling at 3,930 feet on the F. Hilligas No. 3, also in Willing Township. In neighboring Alma Township, G. L. Cabot, Inc., is drilling at 3,585 feet on the C. W. Vossler farm.

Other Potter County operations are in nearby Oswayo Township, where Cunningham Natural Gas Co. is building the rig on the F. Markey farm; in Sweden Township, where Evjen, Harris and others are drilling at 2,050 feet on the A. R. Mitchell farm; in Allegany Township, where G. L. Cabot, Inc., is drilling at 2,663 feet on the William Cobb farm; in Harrison Township, where Penn York is drilling at 4,537 feet on the Lena Barnes No. 2, and in Bingham Township, where New York State Natural Gas Co. is drilling at 1,785 feet on the F. McCarthy farm and where Sylvania Corp. is drilling at 460 feet on the Harrison No. 2.

The wildcat test of the New Penn-McKean interests on the Glenn Taylor farm in Ceres Township, McKean County, topped the Onondaga limestone at 4,495½ feet and was reported drilling at 4,555 feet. The Penn Brad Oil Co. wildcat on Warrant 5574, Hamilton Township, this county, was drilling at 4,000 feet.

Little Rig Economy —



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ODESSA L. D. 683 Local 684 | FORT WORTH Local and L. D. 3-3508 | SHREVEPORT L. D. 15 Local 8481 | CENTRALIA, ILL. Local and L. D. 589

TULSA L. D. 681 Local 5-3204 | OKLAHOMA CITY L. D. 785 Local 7-2725 | BARTLESVILLE Local and L. D. 3410 | WICHITA L. D. 59 and 118 Local 2-1431 and 2-1432

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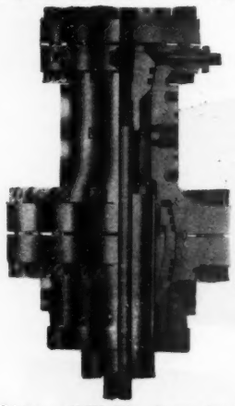
Full particulars gladly sent on request.



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Among the Drilling

GRACE & WOODS, drilling contractors and independent operators of Tulsa, have staked a location under their own name in the K.M.A. area of Wichita County, Texas, and have contracted a wildcat test in the Hull-Silk area of northern Archer County. The company's test in Wichita County is No. 1 D. F. Love Estate, 330 feet from the north and east lines of the W. S. Kennard Survey, Abstract 171. It is a semiwildcat east of production on the Burnside lease on the northeast edge of the K.M.A. pool. The new contracted test is for I. E. Harwell and associates of Burkburnett and is No. 1 W. Ford, in the David Meyer Survey, about 2 miles due west of the recent pool opener, Sikes No. 1 Ford. The test was staked and surface pipe set over a month ago by A. L. Bollings and associates of Oklahoma City. Contract depth is 4,500 feet seeking the pay horizons of the Hull-Silk pool.

L. T. BURNS, contractor and operator of Wichita Falls, Tex., has staked a location for a proposed 4,000-foot rotary wildcat in Jones County, West Central Texas. The wildcat will be his No. 1 J. F. Mayfield, in the northeast corner of the north 160 acres of the Mayfield tract in Section 24, Block 2, S.P. Survey, about 6 miles southwest of Anson. Mr. Burns holds about 1,000 acres in the vicinity of his test.

CLIFF CAMP DRILLING CO., of Dallas, Tex., has been awarded the contract for drilling a 4,650-foot wildcat test in Cooke County, North Texas. Means & Howard have located their No. 1 W. T. Lynch about 2½ miles southeast of Callisburg and in the northeast corner of the A. Edmiston Survey. The well is on a 1,400-acre block which the operators acquired last summer following the opening of the deep Walnut Bend pool by Sinclair Prairie Oil Co. Contractor is moving in materials and the drilling is scheduled to start by the close of the week.

FRED DEVORE, contractor and operator of Amarillo, Tex., associated with Les Whittaker and Bill Adams, both of Amarillo, will drill a projected 4,000-foot wildcat test for the three-way partnership on a block of 10,000 acres just outside the city of Amarillo. The exact location has not been staked but it is to be in the vicinity of the SW cor. Section 101, Block 2, A.B.&M. Survey, which is about the center of the block. While the contract calls for actual drilling to start not later than March 10 it will probably be started several days before as preliminary work began last weekend. Cable tools will be used all the way, powered either by gasoline or Diesel engine.

L. A. NORDAN, San Antonio, Tex., drilling contractor, has apparently opened a new South Texas oil pool for Capano Oil Co. of which he is a member. The company's No. 1-C Tom O'Connor, 3 miles southwest of the Tomoconnor field, Refugio County, cored highly saturated porous sand from 5,854 to 5,877 feet. The well is considered to be on a separate structure. The indicated pool opener is in the eastern part of the Tim Hoyt Survey and on a 786-acre tract out of the Tom O'Connor ranch.

AJAX DRILLING CORP., Big Spring, Tex., has moved in a rotary rig for drilling a wildcat for Continental Oil Co. as its No. 1 Munger, Section 38, Block 31, T.&P. Survey, about 9 miles south of Gail in Borden County, West Texas. The test will be watched as it is in the midst of several dry holes, the nearest being 2½ miles northeast and the others to the south and southwest. The new wildcat is contracted to 4,000 feet and was being spudded last week-end.

HARRY BASS, Dallas, Tex., drilling contractor, has completed the closely watched deep Glen Rose test in East Texas Opelika area of Henderson County. The well, Tide Water-Seaboard-Humble No. 1 S. S. McGee, having been in the testing stages for several weeks, was completed for 436 bbls. of water-white distillate in 24 hours. The flow was through a one-half inch choke under pressures of 1,900 pounds on the casing and 1,625 pounds on the tubing. The ratio amounted to 64 bbls. of distillate per 1,000,000 cu. ft. of gas. The rig is being dismantled and reports are the operators, who now have one dry hole, one freak oil producer, and two distillate wells in the area, will not further explore the structure for oil. Production is from the deep Glen Rose of the lower Marine Trinity sands and the new distillate producer is on the S. S. McGee lands of the R. Acosta Survey, about 3½ miles northeast of the town of Murchinson and about 2,000 feet north of the nearest producer.

J. F. WEST, contractor of Albany, Tex., will drill a wildcat in northern Shackelford County, West Central Texas. It will be B. D. Taylor No. 1 J. H. Nail, in the NE quarter of Section 97, E.T.R.R. Survey, about 7

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miles north of the Cook pool. Contract depth is 2,000 feet and the contractor was moving in machinery last week-end.

PARKER DRILLING CO., Fort Worth, Tex., has obtained a farmout from Texas Co. on 120 acres to the west of production in the McCamey area and lying across the line of Crane and Upton counties of West Texas. Acreage consists of the NE quarter and W half of the NE quarter of Section 22, Block 35, H.&T.C. Survey. The acreage is offsetting production to the west and the drilling company plans immediate development of the tract. The firm has already staked its No. 1 King ranch, 330 feet from the north and east lines of the section.

TAUBERT & McKEE DRILLING CO., Fort Worth, Tex., has added a partner. C. J. Siemoneit, former independent operator of Dallas, has moved to Fort Worth to become associated with the firm. Mr. Siemoneit had been secretary-treasurer of the Illinois Oil Co., Herschback Drilling Co., Indian Oil Co., and Ajax Drilling Corp. He also formed the Stewart & Siemoneit Drilling Co. with M. P. Stewart, which last week spudded its first test. It was for Ungren & Frazier and is in the new Griffin pool of Jones County. Meanwhile, Taubert & McKee have two tests drilling, one below 1,800 feet for Rowan & Nichols in the Bailey lands just west of Bryson in Jack County, and the other for Ralph R. Carroll, a wildcat in Jones County, which is below 1,600 feet.

HOUSH & THOMPSON received contract from Pomo Petroleum Co. for No. 1 Sentell, to be drilled in the newly opened Eola field in Avoyelles Parish, coastal Louisiana. The well is in Section 5, about 1,200 feet northeast of the Sid Richardson No. 1 Haas Investment Co., the discovery well. In the Fairbanks field, Harris County, one rotary rig is operating for themselves, while at the Eureka field No. 1 W. T. Helberg is being completed to extend the field eastward.

JORDAN DRILLING CO. has completed its first producer in the old Batson field, Hardin County, Texas, and has moved the rig over for No. 2 Marrs-McLean, on the southwestern flank of the dome.

HELMERICH & PAYNE, INC., will move in a rig to Wharton County, Texas, where a 6,500-foot test will be drilled on the J. L. Wyatt lease in the E.T.R.R. Survey, Section 99, about 4½ miles west of the Danovang in the southern part of the county.

CRON & GRACEY are rigging up for a wildcat test in the Huffsmith area, Harris County, Texas, for No. 1 R. D. McDonald, a projected 6,100-foot hole. The well is about 5 miles northeast of Huffsmith in the Andrew Lawson Survey.

TRINITY DRILLERS, INC., completed another producer in McFaddin field, Victoria County, Texas, for Barnsdall Oil Co. and is moving the rig to a new location. Lewis Production Co. No. 5 Drushel was completed as a producer in the Cordele field, Jackson County, while two other tests were completed in the Driscoll and North Killam fields for Continental Oil Co. and Superior Oil Co. In the East Premont field, Jim Wells County, Transwestern Oil Co. No. 1 Dunlap is being tested.

GLENN H. McCARTHY completed another distillate producer in the Katy gas field, Waller County, Texas, for Stanolind Oil & Gas Co. and is moving the rotary to a new location. In the League City field, Phillips Petroleum Co. No. 1 Dr. Patton tested salt water in two production tests below 10,000 feet, and the hole has been plugged back to approximately 9,000 feet, where another test is scheduled to be made.

COMET DRILLING CO. drilled No. 1 Tarby, C NW NE of Section 17-1n-2e, Murray County, Oklahoma, to a total depth of 2,505 feet, and ran an electrical survey before abandoning the test.

BURNHAM DRILLING CO., after opening a new shallow oil pool in the Pine Island section of Caddo Parish, North Louisiana, several weeks ago for Colonial Corp. is nearing completion on an offset well in the new area.

J. R. LOCKHART, drilling contractor and operator of El Dorado, Arkansas, has taken over a Calhoun County wildcat and will resume drilling below 3,291 feet shortly.

J. C. TIPPETT, Shreveport, La., drilling contractor, brought in one of the best oil producers to date in the south flank of the Cotton Valley field. The well, Woodley Petroleum Co. No. 1 Couch, made an initial production of 405 bbls. daily through a three-sixteenths inch choke. The crude ran 40.5 degrees.

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North and East Texas

By
D. H. STORMONT

1,800-Foot Pay in Holliday; Cooke County Pools Active

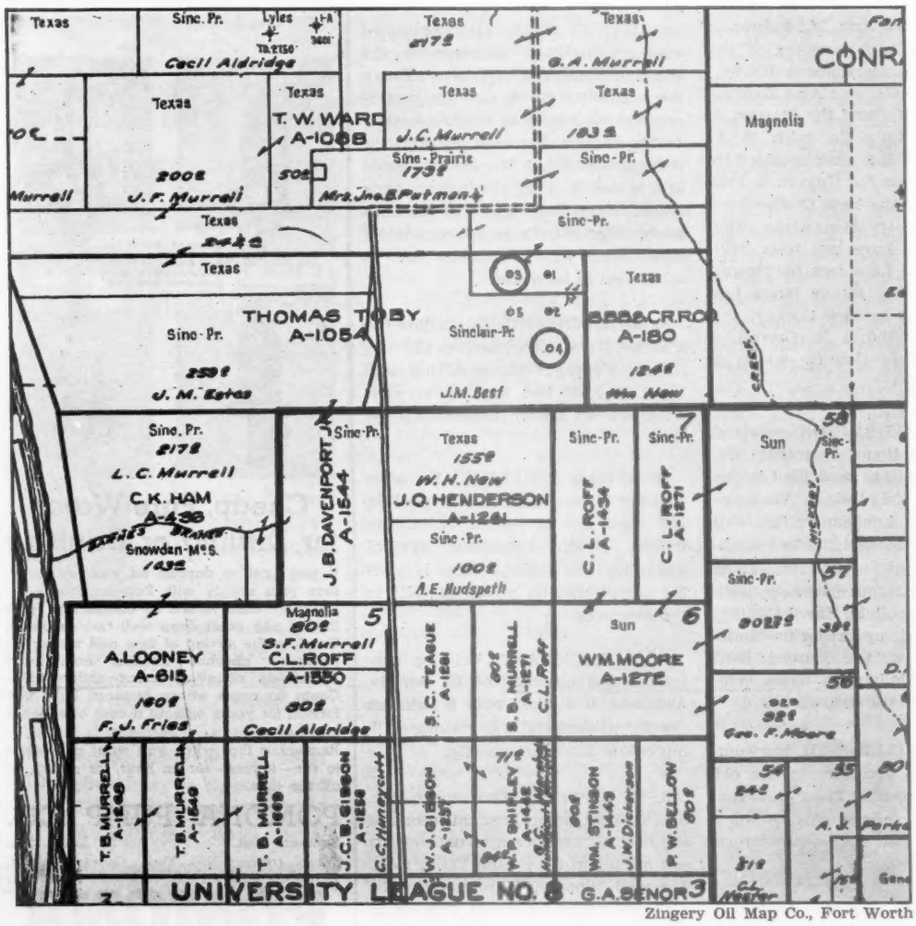
WICHITA FALLS, Tex., Feb. 13.—Increased development in two Cooke County oil pools and the opening of a shallow oil producing horizon for Wichita County's Holliday pool, together with general wildcat and field extension activity in several other North Texas counties featured development in that area.

A location-south extension was assured for the deep Strawn sand Walnut Bend pool, 9½ miles north of Gainesville in northeastern Cooke County when Sinclair Prairie Oil No. 4 Best, south offset to the company's No. 2 Best, topped the sand at 4,947 feet and cored saturation to a total depth of 4,962 feet, still in saturation. Seven-inch casing was cemented on top of the sand and plug will be drilled the first of the week. The company's No. 3 Best, west offset to the No. 1 Best, was bailing and testing in 26 feet of saturated sand topped at 4,925 feet. The company reported the two tests appeared likely to make producers as good as the two already completed, the No. 1 Best being completed for slightly less than 1,000 bbls. daily and the No. 2 testing 1,054 bbls. daily.

In the Voth area south of Muenster in Cooke County the Trumpter Oil Co. No. 1 Voth, just southwest of the No. 2 Voth discovery well which was completed for 302 bbls. of oil in 17 hours, was drilling ahead at 1,400 feet. The second test in the area, the Joe Beard No. 1 Voth, has been abandoned as dry at a total depth of 1,835 feet after missing the pay section of the pool. Production in the pool is from the Ellenburger lime of Lower Ordovician and the area is located about 21 miles west of the Walnut Bend area.

In the Holliday pool of southern Wichita and northern Archer counties another oil producing sand has been added. King Oil Co. No. 1 Hormel, CWL Section 19, Block 4, Denton County School Lands, east outpost to the field, pumped 62.49 bbls. of oil and 30 bbls. of water in 24 hours from an upper Canyon sand logged from 1,817 feet to 1,821 feet, plugged-back depth. The outpost had been carried to the lower sand, where it was a failure and operator plugged back to test the shallow sand. Indicating an extension of the 4,300-foot pay in northern Archer County's Hull-Silk pool the Chapman & McFarland No. 1-D Wilson, in the southwest corner of Block 128, A.T.N.C.L. Survey, is running casing for a test. The well was a failure in the 3,800-foot pay and encountered saturation in the 4,300-foot section from 4,255-58 feet. Operator will drill in with rotary so that the sand may be cored. Archer County's newest oil pool opener, the Sikes No. 1 Ford, in the T. Cecil Survey, about 4 miles northeast of the Hull-Silk pool, has been given an official gauge of 255 bbls. of oil and 78 bbls. of water in 24 hours. The well is producing from the 4,300-foot section found in the Hull-Silk pool but due to its distance from the field it was set up as a new discovery.

A new wildcat test was under way in northern Archer County when it was reported that I. E. Harwell of Burkburnett and associates had taken over the location staked for the A. L. Bolling and others No. 1 W. Ford, in the David Meyer Survey. Test is 2 miles due west of the Sikes No. 1 Ford discovery well.



Zingery Oil Map Co., Fort Worth

The deep Strawn Walnut Bend pool of Cooke County has been receiving considerable development in the past few weeks and is now in line for two new completions

Wildcat Locations

Field men for Staley Oil Co., Wichita Falls, were checking leases on a block of 5,000 acres in Montague County preparatory to staking location for a test. The acreage is south and southwest of the town of Montague and the lower Strawn sand test is expected to be started late this week.

A 4,000-foot wildcat test in Hardeman County will seek the production found in Wilbarger and Foard county pools to the east and south. Norris-Gilbert Co. of New York City has staked a location for its No. 1 V. H. Weekley Ranch, in Section 85, Block 16, H.&T.C. Survey, in the extreme southeast corner of the county. The location is 6 miles northwest of the Fluhman pool in Wilbarger County and 5 miles northeast of the Thalia pool in Foard County.

In Baylor County, British American Oil Co. is nearing the producing horizon in its second test of the new pool recently opened by the company. The test is half a mile south of the discovery well and is drilling below 2,000 feet, the discovery well having been completed for about 400 bbls. daily from a depth of 2,586-2,605 feet.

EASTERN TEXAS

DALLAS, Tex., Feb. 13.—Indicated completion of another deep Glen Rose test as a distillate producer and staking of a deep wildcat test in the northern part of the East Texas basin featured a rather inactive week in the eastern Texas district.

An unofficial gauge has been reported on the Barnsdall Oil Co. No. 1 Tubbs, in the Samuel Edmondson Survey, in the Cayuga field of Anderson County, which gave the well 30 bbls. of distillate in 24 hours. Production is from a total depth of 7,545 feet in the Glen Rose of lower Marine Trinity. The producer has been acidized with 3,000 gallons and with 6,000 gallons in the most porous section from 7,460-80 feet. The company drilled the well as a tight well and little is known of it at the present time. In the same field the Tide Water Associated Oil Co. and Seaboard Oil Corp. will reacidize the No. 21 Wills, in the same survey as the new producer. The No. 21 Wills was the first deep well in the field and was completed some three years ago for 75 bbls. of distillate daily on the basis of a five and one-half hour flow.

A new deep Trinity wildcat test has been staked and work begun to give the East Texas district its second deep announcement since the year began. The well has been staked as the George Strake No. 1 W. C. Farrier, Jesse Walker Survey, and is about 4 miles east of Yantis in north central Wood County. It is on a block of 6,000 acres and is contracted to 6,500 feet. The drill site was selected last summer and at that time contracted to 8,500 feet. Roads are being built and the test will be started in the next week.

EAST TEXAS FIELD COMPLETIONS
(One-hour tests)

Gregg County—Longview Area

B. F. Phillips No. 3 J. C. Bumpas, 3,512-31 feet, 40 bbls. Producers No. 1-A O. A. Laney, 3,654-55 feet, 30 bbls. Richards & Holloway No. 5 Spipper-Garner,

(Continued on Page 116)

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11,632 feet of 9⅝" casing set and cemented—a feat that required the utmost in technique and a record that demanded the best from men and materials. Setting casing with a total weight of 250 tons (equal to the combined tractive efforts of eight heavy passenger locomotives) at a point two and one-fifth miles below ground is a task which all operators will appreciate.

We are very pleased that The Texas Company selected Baroid Products for use in the drilling of this well, and at the time this casing was run.

HERE ARE THE FACTS

Casing Size: 9⅝"
Casing Weight: 43.50 lbs. per foot
Total Length: 11,632 feet
Total Weight of Casing: 505,296 lbs.
Started Running Casing: 6:30 p. m. Nov. 9
On Bottom: 2:55 p. m. Nov. 10
Total Time Running and Cementing Casing: 23 hours, 21 minutes
Floated: Last 3,000 feet
Maximum Weight on Indicator: 280,000 lbs.
Mud Data: At Time Casing Was Run:
Type: Baroid-Aquagel
Weight: 11.1 lbs. per gallon (83.0 lbs. per cubic foot)
Viscosity (Stormer Instruments at 600 r. p. m.): 23 centipoises
Viscosity (Marsh Funnel—1500 cc. in; 1000 cc. out): 51 seconds
Water Loss (Baroid Low Pressure Tester): 16 cc. in 30 minutes
Cake Thickness: 4-32 of an inch

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Canadian Fields

Completions and Operations in Northwest and in Ontario

By VICTOR LAURISTON

CHATHAM, Ontario, Feb. 11. — With available storage practically filled, the Alberta Conservation Board has reduced the aggregate allowable of Turner Valley crude wells from 12,500 to 10,000 bbls. a day, effective February 1. Since the quota of 12,500 bbls. was set on December 5, several new completions had increased the actual production to around 14,300 bbls. a day, with the market demand at its lowest winter figure. As soon as accumulated stocks are reduced, an increase in allowables is anticipated.

Under the new quotas, Royal Canadian Oil Co. No. 2 is the largest producer, with 302 bbls. a day.

Anglo-Canadian Oil Co. and its subsidiaries, with 14 wells, have aggregate allowables of 2,241 bbls. a day. Royalite Oil Co. allowables aggregate 1,927 bbls. daily from 14 wells and Brown Oil Corp. with 13 wells aggregates 1,823 bbls. Some 20 independent companies, with 27 wells, make up the balance of 4,009 bbls. a day.

Turner Valley Producers

In North Turner Valley, Home Oil Co. No. 2 Millarville, LSD 6, Section 33-20-3w5, finished in the limestone at 8,480 feet, is retesting after having been given an official allowable of 276 bbls. a day. Previous six-hour tests gave a rate of 2,788 bbls. a day through 2-inch choke with 1,165 feet gas-oil ratio and 2,377 bbls. a day through 1-inch choke with 1,075 feet gas-oil ratio. Further acid treatments may be given in both the lower and upper lime.

In the far south area, southwest of the Highwood River, D. & D. Oils No. 1, LSD 12, Section 9-18-2w5, finished in the black lime at 7,400 feet, started at the rate of 1,440 bbls. a day, after an acid treatment of 6,000 gallons. The probable settled production was estimated above 500 bbls. It has been reacidized with 10,000 gallons and is being tested for allowable.

In Section 17-18-2w5, Anglo-Canadian Oil Co. No. 3, LSD 10, finished at 7,738 feet, produced at the rate of 2,263 bbls. through 2-inch choke. It is being given a succession of light acid treatments, and has temporary allowable of 199 bbls. a day, pending official test.

West of the proven field, Okalta Oil Co. No. 6, LSD 3, Section 30-18-2w5, plugged back to 9,994 feet after encountering salt water in the lower lime, was acidized with 5,000 gallons in the upper porous horizon and is testing production. Some increase in gas and crude is indicated.

West Central Drilling

In Section 7-19-2w5, West Central Turner Valley, Valley Drilling Co. No. 1, LSD 11, is below 120 feet.

In Section 6-19-2w5, East Crest Oil Co. No. 4, LSD 8, is in the lower Benton formation below 5,604 feet after getting the cardium sandstone marker at 5,180 feet, some 50 feet higher than at Anglo-Canadian No. 1 producer.

In Section 5-19-2w5, Calwin Royalties No. 1, LSD 15, is below 2,250 feet after setting 10-inch casing at 1,680 feet. Winalta Royalties No. 1, LSD 1, is below 1,457 feet.

Tests in the Lime

In Section 32-18-2w5, Royalite Oil Co. No. 36, LSD 13-14, is below 7,725 feet after getting the Madison lime at 7,460 feet and cementing 8-inch casing 20 feet in. Royalite No. 37, LSD 11, Section 5-19-2w5, is below 7,277 feet after getting the lime at 7,193 feet.

West Side Drilling

In Section 32-18-2w5, Oil Ventures No. 1, N half LSD 14, is below 2,165 feet after setting 10-inch casing around 1,925 feet. British Colonial Oils No. 1, LSD 5, is in very hard formation below 4,016 feet, and believed getting close to the cardium sandstone. Vantage Oils No. 1, LSD 12, is below 570 feet.

In Section 20-18-2w5, York Oils No. 2, LSD 6, is in the Benton formation below 5,002 feet.

In Section 17-18-2w5, Anglo-Canadian Oil Co. No. 4, LSD 6, is deepening after setting surface casing at 1,320 feet. Anglo-Canadian No. 6, LSD 3, is rigging heavy-duty rotary outfit from the company's No. 1 well in the Steveville area, and will spud this month.

West of the proven field, Anglo-Canadian Oil Co. No. 5, LSD 8, Section 31-18-2w5, is below 3,764 feet. Scottish Petroleums No. 1, LSD 16, Section 19-18-2w5, is below 5,205 feet. Royalite Oil Co. No. 38, LSD 16, Section 8-18-2w5, is below 4,990 feet, drilling up lost drill pipe.

North Turner Valley

In North Turner Valley, Royalite Oil Co. No. 35, LSD 7, Section 27-20-3w5, is sidetracking below 6,175 feet.

Model Assists Harris Tests

Model Oils, Ltd., headed by W. C. Fisher, has arranged to assist in completion of two tests by George Harris and associates in return for royalty interests. In the far south, Harris No. 1, LSD 13, Section 9-18-2w5, offsetting D. & D. Oils No. 1 producer to the north, is in the Benton formation below 4,057 feet. Harris No. 2, LSD 15, Section 32-18-2w5, is below 2,408 feet after setting casing.

New Tests Planned

Section 29-18-2w5, west of the earliest crude discoveries, is expected to see some new activity this spring. Royal Canadian Oil Co. No. 3 is erecting derrick in LSD 12, with test expected to spud this month. Union Drilling Co. of Calgary will handle the contract. Command Oils No. 2 was located some weeks ago in LSD 11, west of the Royal Canadian location and south of Command No. 1 producer. Royalite Oil Co. No. 39 has been spotted in LSD 3, and will spud as soon as rotary equipment is available from one of the tests now nearing completion. All these tests are somewhat west of the earlier producers, and lower on structure.

Complete Tests of Field

Tests of the Turner Valley field by the Alberta Conservation Board were recently completed, indicating a field potential, with five wells not recorded, of 51,133 bbls. Tests were taken with 1-inch choke. The previous tests, taken in September with 2-inch choke, with three wells not included, showed potential of 67,336 bbls. Bottom-hole pressure tests averaged 1,285 pounds compared with 1,292 pounds in September, some of the wells showing good gains during that period. Gas-oil ratios also were generally better than on the previous tests.

East Side Drilling

On the Twin Dome structure northeast of Turner Valley, Anglo-Canadian Oil Co. No. 1, LSD 7, Section 16-21-28w4, is below 5,046 feet.

Pouce Coupe Prospect

On the Pouce Coupe structure, Guardian Oil Co. No. 1, Section 7-8-12w6, is preparing to resume from 2,560 feet after the winter shutdown. At 2,320 feet the drill got a 45-foot sand at the break between the St. John shale and the Bullhead formation with good indications of oil and gas, and considerable crude has seeped into the hole from this horizon. The same horizon in the Imperial-Pouce Coupe well 3½ miles to the northwest gas a gas flow estimated 10,000,000 cu. ft. a day. Guardian No. 1 will continue drilling to the base of the Lower Cretaceous, where a thick oil-bearing sand is expected around 4,200 feet. This horizon has never been reached in the Pouce Coupe area.

While the Pouce Coupe structure is generally considered a continuation to the northwest of the foothill belt, of which the Turner Valley field forms part, structural conditions show considerable difference. Exposures where the structure crosses the Peace River in Township 82-12w6 indicate a gentle arch structure about 10 miles in width. The trend is north-south rather than northwest-southeast, the prevalent trend of the Rocky Mountains and the parallel foothill structures; indicating the Pouce Coupe fold originated in pre-Cretaceous time, before the Rocky Mountains emerged.

Northern Foothills

On the Grease Creek structure, the Grease-Creek-Northwest Co. No. 1, LSD 2, Section 13-29-7w5, is below 1,250 feet after running 16-inch casing to 1,125 feet. Test is being financed by Imperial Oil, Ltd., and Grease Creek Petroleums, Ltd., the latter headed by Frank McMahon of Vancouver. The companies have put in their acreage to make a solid block of 7,160 acres, and are sharing fifty-fifty in cost of development and production, Imperial Oil having first refusal of the Grease Creek company's share of production at prevailing field prices. Cable tools will be used to around 4,000 feet, changing to rotary if deeper drilling is required. Production is anticipated in the Madison limestone, which is expected at shallower depth than in Turner Valley. The Grease Creek structure occupies a long valley surrounded by low hills, the Belly River outcrops pitching at an angle to indicate complete closure. Location was made by Chief Geologist T. A. Link of Imperial Oil, Ltd.

On the Ram River structure, west of Rocky Mountain House, Ram River Oils No. 1, Township 38-12w-5, is in the Devonian limestone below 832 feet with casing at 200 feet. A third small show of crude was encountered in dark lime between 805 and 815 feet, previous shows having been met at 590 and 650 feet; the cores continuing to show 30 degrees dip. Production is expected within 3,000 feet.

On the Clearwater structure, Altoba No. 1, Section 31-34-9w5, bottoming at 1,318 feet, is bailing to test production from a 90-foot sand below 1,196 feet.

Monarch Structure

There has been considerable leasing activity on the Monarch structure, northwest of Calgary, some recent acreage transfers including drilling commitments. The area was first tested in 1914-15 by Monarch Oil Co. No. 1, NW quarter Section 5-32-6w5, which had oil showings but was abandoned at 3,608 feet. Mount Stephen Oil Co. No. 1, LSD 8, Section 25-32-7w5, got substantial gas showings around 2,900 feet but was abandoned at 4,500 feet. Other drilling in the immediate area has been comparatively shallow, and even the deep tests have not reached potential oil horizons.

Waite Valley Structure

National Petroleum Corp., of Calgary, with two crude producers in Turner Valley, has acquired extensive acreage on the Waite Valley structure west of the North and Central Turner Valley areas. The holdings extend approximately 10 miles along the structure. It is planned to drill to 3,000 feet with cable tools, finishing with rotary. Several companies tested the area in 1929 and numerous oil showings were encountered, but owing to apparent faulting none of the tests was carried to a conclusive depth. The deepest, Calgary Development No. 1, LSD 10, Section 21-19-3w5, was abandoned at 5,010 feet. Subsequent drilling on the Turner Valley west flank has indicated a likelihood that deeper drilling in Waite Valley would secure production.

Steveville Operations

In the Steveville area, east of Calgary, Anglo-Canadian Oil Co. No. 1, LSD 2, Section 13-21-12w4, is preparing to resume after cementing 2 feet in the Madison limestone at 3,178 feet. The heavy-duty outfit is being moved to Turner Valley, and two new outfits are being brought in, one of which will complete No. 1 well in the lime. Anglo-Canadian No. 2 has been spotted in LSD 4, Section 14-20-11w4, about 7 miles southeast of No. 1, on acreage recently subleased from Altoba Agencies, Ltd. The Anglo-Canadian company and Petroleum Investments, Ltd., have jointly acquired an additional 20,000 acres 10 miles southeast of No. 1. Anglo-Canadian No. 1 got considerable shows of crude, estimated 18 to 20 gravity, at the Madison contact.

In the same area, Anaconda Oil Co. No. 1, LSD 15, Section 9-22-12w4, is running 10-inch casing to bottom at 2,520 feet, preparatory to deepening for 8-inch. California Co., Alberta subsidiary of Standard Oil Co. of California, has also secured some acreage.

Saskatchewan Drilling

On the Box Elder dome, in southwestern Saskatchewan, Western Royalties Co. of Calgary is cleaning out the former Twin Provinces well, LSD 6, Section 21-11-29w3, and will deepen from 2,130 feet. It will be known as Western Royalties No. 1. Western Royalties No. 2, formerly the Gem Dome well, LSD 6,

(Continued on Page 129)

Southwest Texas District

By
F. L. SINGLETON

Important Wildcats Testing and Field Extensions Loom

CORPUS CHRISTI, Tex., Feb. 13.—While the testing of four wildcats in Jim Wells, Refugio and Brooks counties were the highlights of development in Southwest Texas the past week, the Riverside field, Nueces County, was holding the attention of numerous operators as production tests were scheduled to be made on two south outpost wells.

In Jim Wells County, on the highly regarded Frio-Vicksburg trend, H. H. Howell and others No. 1 W. T. Wright, 10 miles north of the town of Alice and in the Ross M. Bridges Survey, is bottomed at 6,800 feet, and 5½-inch casing was cemented at 6,790 feet, preparatory to testing sand at 6,640-6,780 feet. This well attempted to blow out last week, and casing was cemented on the strength of an electrical survey and sidewall cores, which are reported to have shown favorable possibilities.

Southeast of Alice and approximately 2½ miles southeast of the East Alice area, Gravis & Mathews were scheduled to perforate casing in No. 1 Frances Clark which is bottomed at 5,330 feet, with 5½-inch casing cemented at 5,309 feet. Sidewall cores taken at 4,398 feet, 4,777 feet, 4,834 feet, 5,198 feet, and 5,205 feet, showed sand with an oil odor. Should the well be a commercial producer, it will be looked upon as an extension to the East Alice field and will result in an extensive drilling campaign. On the extreme east side of the East Alice field, Henshaw Brothers No. 1 Thigpen flowed 165 bbls. per day through an eighth-inch choke from perforated casing at 5,351-55 feet.

A new pool or an important extension to the prolific Tomoconnor field, Refugio County, is believed to have been opened by Copano Oil Co. No. 1-C O'Connor, located 2½ miles southwest of the Tomoconnor field and several miles east of the town of Refugio. Sand with small shale streaks was cored at 5,854-56 feet, and oil sand at 5,856-76 feet. Casing was cemented on bottom and the well is being completed through perforations at 5,868-73 feet. The sand section is the Frio formation, which produces from approximately the same horizon in the Tomoconnor field. The well is located on the large O'Connor ranch in the Timothy Hoyt Survey.

Two miles southeast of the town of Falfurrias in Brooks County, Southern Minerals Corp. No. 1 Proctor, reported last week as being abandoned at a total depth of 7,726 feet, was plugged back to 6,880 feet and 5-inch casing was cemented at 6,900 feet. Decision to test the well was made following an electrical survey and side-wall cores which showed possible oil sands at 6,355-63 feet, and at 6,867-69 feet. The casing was perforated at 6,855-70 feet, and the hole was being washed late in the week.

The Riverside field, northwestern Nueces County, seemed assured of receiving a major extension as Heep Oil Corp. and other prepared to test No. 1 Smith, 1½ miles south of production. The hole is bottomed at 5,050 feet and 7-inch casing was cemented at 5,049 feet. Gas sand was cored at 5,016-17 feet and soft sand with an oil and gas odor was cored at 5,017-21 feet. Several cores are reported to have been missed but an electrical survey logged the sand section at 5,015-45 feet. No drill-stem test was made. Approximately a half mile north of this well, Republic Natural Gas Co. No. 1 Seaboard is being tested through perforated casing at 5,352-58 feet. This test cored sand and sandy shale at intervals at 4,928-99 feet, and sand with an oil odor at 4,999-5,007 feet. Sand with a slight gas odor was cored at 5,403-06 feet. The hole is bottomed at 5,525 feet and 7-inch casing was cemented at 5,502 feet.

The completion of the above wells as commercial producers would start extensive drilling in the area which is leased by various major and smaller companies. The structure was discovered as a gas field the latter part of December, 1938, by Stanolind Oil & Gas Co., and last week received its first oil production with the completion of Seaboard Oil Co. No. 2 Wilson, about 4,500 feet due west of the gas well. Due to a high gas-oil ratio, this well was killed for the third time and is now flowing oil into storage at the rate of 14 bbls. per hour through various chokes under a working pressure of 1,300 pounds after reperforating casing at 4,996-99½ feet.

Two new operations were started in the area. Offsetting the Seaboard producer, H. D. & H. spudded No. 1 Cullen C. Wright, while approximately 1 mile southwest, Henshaw Brothers spudded No. 1 Counties. Both tests are being drilled on farmed-out acreage from the Shell Petroleum Corp.

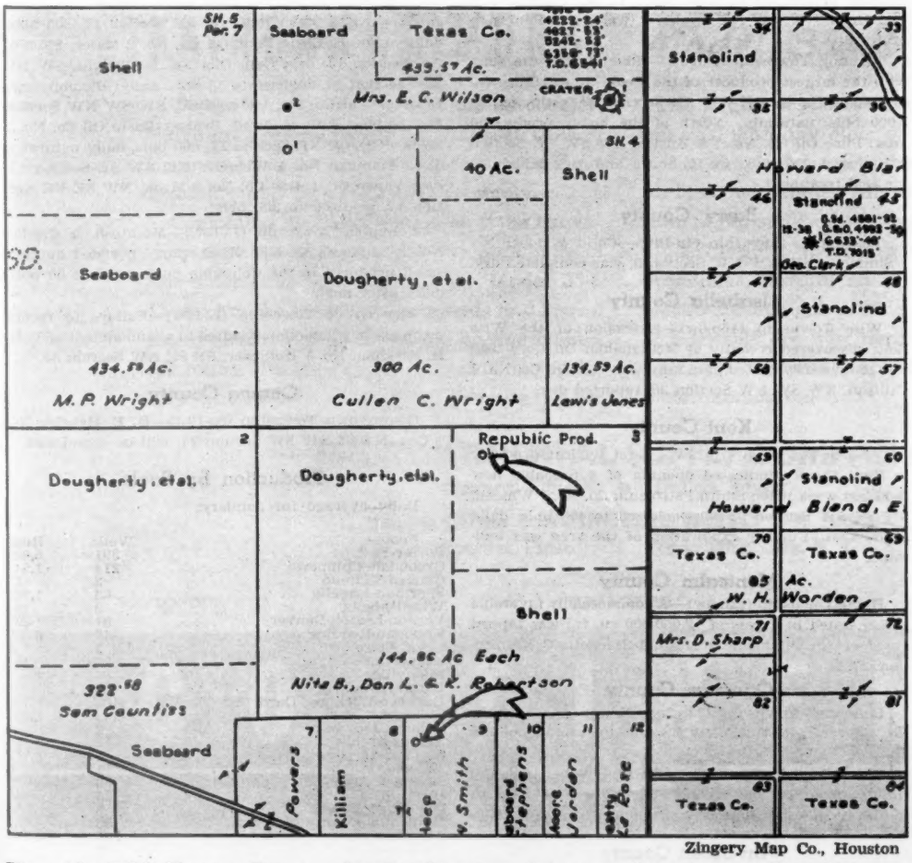
Location for an interesting wildcat operation was made by O. W. Killam for No. 1 J. O. Chapman and others, approximately 8½ miles east of the Luby field in Section 106, Laurels farm tracts. Across the line in San Patricio County, Plymouth Oil Co. spudded No. 1 Wilson, John Brown Survey, while location for another wildcat was staked by A. O. Morgan and others for No. 1 H. S. Smith, 1½ miles northwest of Sinton in the John Pollan Survey.

Live Oak County

In Live Oak County, Holland & Smith No. 1 Gayle, the discovery well of a new shallow field, 1½ miles south of the Ezzell field, pumped 50 bbls. of oil in 22 hours. The well is located in Section 59, Simmons subdivision, and is producing from the Government Wells sand at 1,390-97 feet, the total depth. Several locations are reported to have been made in the area.

Activity is in evidence in the new west extension area of the East White Point field, San Patricio County. Offsetting J. B. Cage and others No. 1 Dunn, which extended the field approximately 9,000 feet west, and practically joined production with the old White Point gas field, Republic Natural Gas Co. staked location for No. 20 E. A. Rachel. The well is located 906 feet west of No. 12 Rachel, an abandoned gas well, and is a west offset to the Cage producer. Midway between the Cage well and the East White Point field, Houston Oil Co. staked location for No. 3 Baldwin, which offsets the company's No. 2 Baldwin, completed last week after it flowed an initial daily production of 162 bbls. of oil through an eighth-inch choke.

Four new producers were reported in the McCampbell field in Aransas and San Patricio counties. Richardson Petroleum Co. No. 1 Cotter-Ayers flowed 552 bbls. daily through a three-sixteenths inch choke. Same company No. 2 Mills flowed 551 bbls. daily through the same size choke. Rutherford Oil Corp. No. 4 McCampbell flowed 492 bbls. through a three-sixteenths inch choke, while Nueces Royalty Co. No. 1 Ammen was completed for an initial production of 505



Zingery Map Co., Houston

Riverside field, Nueces County, showing location of two south outpost wells which are preparing for production tests

bbls. through a three-sixteenths inch choke. All of the wells were completed in the 7,100-foot sand.

Locations for three more wildcats were made in Duval County. Dan Auld and others staked location for No. 1 Demitt in the Jose Marcelo Ynojosa grant; Magnolia Petroleum Co. is moving in material for No. 1 Denman in the Santos Gracia grant, while H. J. Porter and others spudded No. 1-B Clara Driscoll in the Rosa G. Gray Survey. Wildcatting in this county during the first few weeks of the year has shown a large increase, the majority being located along the Cockfield trend through the eastern half of the county.

Two oil wells were added to the Kelsey field in Jim Hogg and Brooks counties. On the Brooks County side of the field, production was extended about 1,800 feet south with the completion of No. 3 McGill Brothers which flowed 137 bbls. daily through a 5/32-inch choke. The hole is bottomed at 4,728 feet, with oil sand logged at 4,702-26 feet. In Jim Hogg County and located 933 feet from production, the same company's No. 6 Kelsey Bass was completed in sand at 4,706-22 feet for an initial production of 32 bbls. in 14 hours flowing through a quarter-inch choke.

COMPLETIONS IN SOUTHWEST TEXAS IN PROVEN FIELDS

Aransas-San Patricio Counties

McCampbell field: Graham Oil Co. and others No. 1 Moeller, perforated casing 7,121-25 feet, 503 bbls., three-sixteenths inch choke. Graham Oil Co. No. 3 Moore, perforated casing 7,121-25 feet, 175 bbls., three-sixteenths inch choke. Shasta Oil Co. No. 1 Carlock, perforated casing 7,135-42 feet, 235 bbls., three-sixteenths inch choke.

Duval County

Casa Blanca field: Magnolia Petroleum Co. No. 2 Duval County Ranch Co., sand 1,211-14 feet, 50 bbls., jetting. Eagle Hill field: Magnolia Petroleum Co. No. 16 Duval County Ranch Co., sand 1,479-91 feet, 60 bbls., jetting. Fitzsimmons field: Collins & Porter No. 7 Fitzsimmons, perforated casing 4,352-58 feet, 126 bbls., 5/32-inch choke. H. J. Porter No. 10 Driscoll, perforated casing 4,340-46 feet, 118 bbls., 5/32-inch choke. Sun Oil Co. No. 9 Brueggemann, perforated casing 4,290-94 feet, 124 bbls., 9/64-inch choke. Hoffman field: Cox, Hamon and others No. 16 Cuellar, sand 2,809-13 feet, 75 bbls., jetting. Magnolia Petroleum Co. No. 24 Weil, sand 2,775-84 feet, 60 bbls., jetting. Longhorn field: Longhorn Drilling Co. No. 2 Miller, 4,897 feet, 151 bbls., quarter-inch choke. M. M. Miller No. 1-A Miller, sand 4,037-44 feet, 206 bbls., 5/32-inch choke. Piedra Pintas field: Owens & Anderson No. 1 Lawhorn, sand 301-3½ feet, 60 bbls. fluid per day, 15 per cent salt water. Rancho Solo field: Coffield and others No. 2 Peters, 1,906 feet, abandoned. Lanning and others No. 7 Peters, perforated casing 1,869-75 feet, 75 bbls., pumping.

Calhoun County

Heyser field: Humble Oil & Refining Co. and

(Continued on Page 116)

Michigan Field Report

By O. C. PRESSPRICH

Complete 20 New Oil Wells and Open Kent County Pool

SAGINAW, Mich., Feb. 13.—Drilling activity in Michigan oil fields spurted last week showing the heaviest new production so far in 1939. Twenty oil wells were completed in all fields, with Bloomingdale's Van Buren pool leading with nine wells and Clare County's Freeman-Redding pool showing five oil completions. Clare fields exceeded Bloomingdale in added potential with an estimated 5,100 bbls. daily, although under curb to an average of 200 bbls. per well per day. Bloomingdale's nine new wells added an estimated 3,265 bbls.

A significant new development was a wildcat completion in Kent County's Walker Township, which opened a pool. The well was acidized to 400 bbls. daily, and a lease flurry was reported in the sector after the strike. Extensive exploration is expected.

Fourteen of the 20 new wells were in Southwest Michigan fields, including the Allegan pools and Bloomingdale. Both the Freeman and Redding areas of Clare showed spotty development, with three of the five new producers ranging from 1,200 to 2,000 bbls. daily.

Montcalm's established Home Township gas field brought in a commercially favorable gasser rated at more than 12,000,000 cu. ft. There were nine dry holes reported in the state.

Allegan County

Clyde Township (2n-15w)—Leighton Oil & Gas Co. No. 1 Martin, NE NW SE Section 9, failed to establish commercial production and will be abandoned.

Ganges Township (2n-16w)—Failure was recorded at V. Leonard No. 1 Crane, NE NE NE Section 1.

Heath Township (3n-14w)—Attempts to establish production in central and southern Heath Township on the trend of Section 1 development failed. Mesel & Spielberg No. 1 Boerman, NE NE NE Section 12, was dry, as well as H. H. Heinig No. 1 Hagenskamp, SW SE SE Section 29.

Overisel Township (4n-14w)—Fortney Oil Co. No. 1 Hoeve, NW SE NW Section 27, gauged 475 bbls. naturally for the best recent addition in any Allegan pool for several weeks.

Salem Township (4n-13w)—Two producers were added to the old section of the Salem pool. They included American Drilling Co. No. 1 Sindlinger, NW SE NW Section 11, acidized to 150 bbls. daily, and Regal Dutch Refining Co. No. 3 Smith Estate, 100 bbls. daily, acidized.

Clare County

Freeman Township (18n-6w)—Two large producers and a smaller well were added to Freeman potentials last week. The small producer, Ide & Glavin No. 1 Van Horn, SW SE NE Section 3, an edge test, reported a flow of 125 bbls. of oil daily and approximately 50 bbls. of water. Socony-Vacuum No. 8 Van Horn, NE NE NW Section 3, led the Freeman producers with an acidized production of 1,500 bbls. C. W. Teater No. 4 Van Horn, NW NW NE Section 3, was a 1,200-bbl. natural well.

Redding Township (19n-6w)—Redding led the state with the largest producer of the week. It was Pure Oil Co. No. 1 Davis, NE NW SE Section 33, estimated at 2,000 bbls. naturally. North of the heavy production area, Pure Oil Co. No. 1-A Austin, SW SW SE Section 27, gauged 275 bbls. in 15 hours and was scheduled for acid treatment.

Barry County

Thornapple Township (4n-10w)—Colin & Soper No. 1 Simmons, SW NW NW Section 3, was completed dry.

Isabella County

Wise Township (16n-3w)—Extension of the Wise field, discovered recently at McClanahan Oil Co.'s test, was temporarily halted by a failure at Ogo Oil Co. No. 1 Callison, NW SW NW Section 35, reported dry.

Kent County

Walker Township (7n-12w)—First wildcat producer in Kent County indicated opening of a probable new field last week when Smith Petroleum Co. No. 1 Whalen, SW SE SW Section 32, was acidized to 400 bbls. daily production. Further exploration of the area was indicated.

Montcalm County

Home Township (12n-6w)—A commercially favorable gasser, rated in excess of 12,000,000 cu. ft., was tapped at American Producing Co. No. 1 Hackett, C NE Section 27.

Ogemaw County

Cumming Township (23n-2e)—Malloy & Gallagher No. 1 Everett, NW NE NW Section 19, was completed dry.

West Branch Township (22n-2e)—Weber Oil Co. No. 2 Vokac, SW NE NW Section 36, was acidized to 150 bbls. daily, the first West Branch producer of 1939.

Van Buren County

Bloomingdale Township (1s-14w)—Nine producers and two dry holes summarizes drilling activities in Bloomingdale's flush production shallow pool. They are: Voorhees Drilling Co. No. 3 Melvin, NW SE SE Section 8, acidized to 500 bbls. daily; W. E. Dotson No. 1 Rogers, SE NW SW Section 8, acidized to 450 bbls.; Fisher & McCall No. 3-B Wiggins, SW SE SW Section 13, 750 bbls. acidized; W. R. Borough No. 1 Baird, SE SE NW Section 14, 300 bbls. daily acidized; Clark & Johnson No. 2 Maier, NE NW SE Section 14, 300 bbls. daily acidized; Little Four Oil Co. No. 2 Maier, SE NW NE Section 14, dry; Gem Oils No. 1 Albright, SW NE NW Section 13, acidized to 15 bbls. daily; Bloomingdale Development Co. No. 1 Merrifield, SW SW NW Section 16, 150 bbls. daily acidized; Bridger Basin Oil Co. No. 2 Meek, NW SW NE Section 17, 500 bbls. daily naturally; J. E. Flanigan No. 1 Wiggens, NE NW SE Section 17, dry; Vanco Oil & Gas Co. No. 3 Meek, NW SE NE Section 17, acidized to 300 bbls.

Columbia Township (1s-15w)—McIntosh & Cryden No. 1 Landrus, SE NE NE Section 10, added another small producer to the Columbia pool, rated at 50 bbls. daily after acid.

Pine Grove Township (1s-13w)—Failure to record commercial production resulted in abandonment of V. R. D. Kirkham No. 1 Hofacker, SE SE NW Section 35.

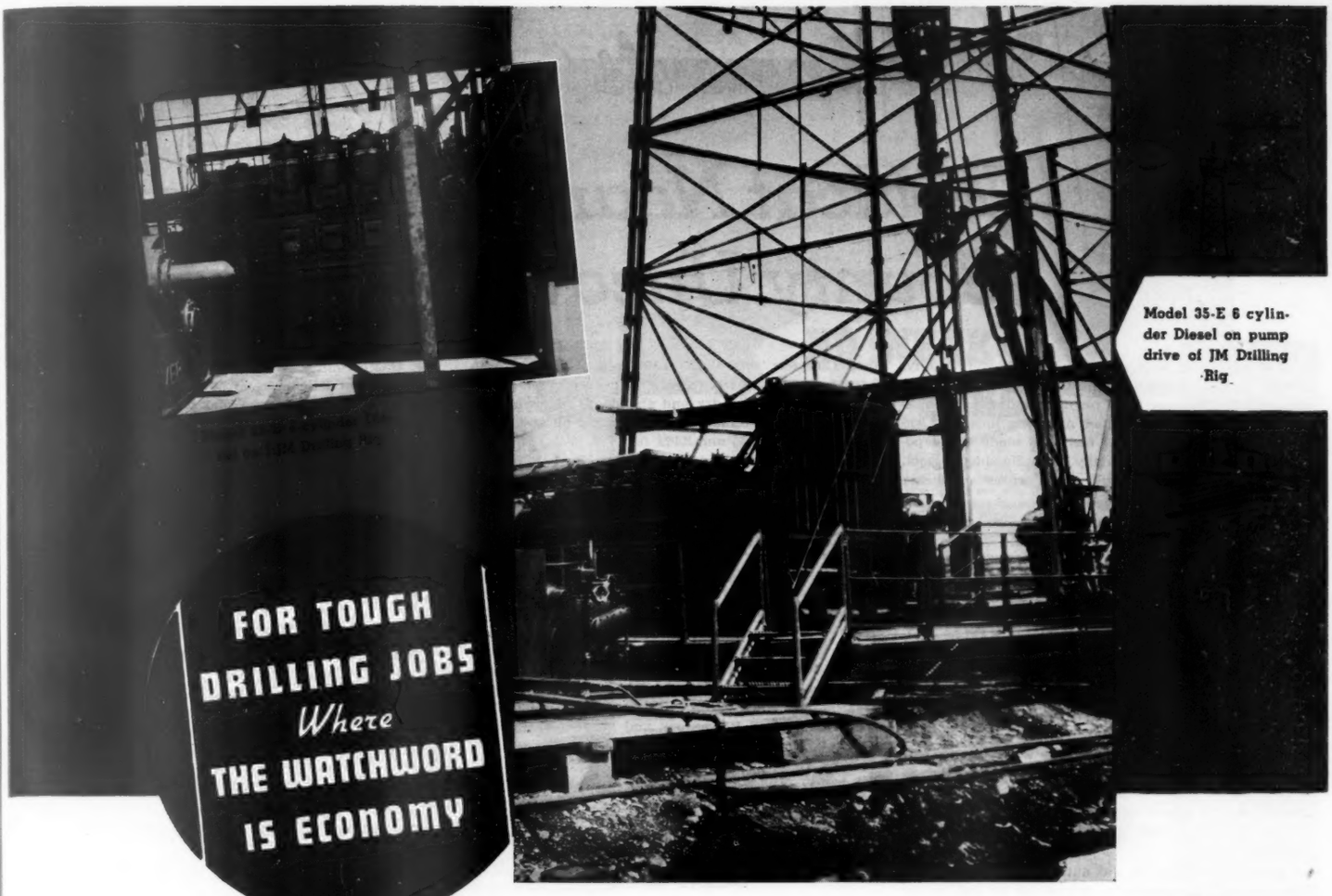
Ottawa County

Georgetown Township (6n-13w)—D. E. Heasley No. 1 Cox, N half NW SW Section 24, will be abandoned.

Production by Pools

Daily average for January:

Pool—	Wells	Runs
Porter-Yost	391	5,860
Greendale-Chippewa	214	1,541
Geneva-Midland	2	18
Sherman-Isabella	63	1,703
Wise-Isabella	3	194
Vernon-Leaton-Denver	81	835
Freeman-Redding	48	8,360
Grant-Clare	2	4
Beaverton	23	162
Edenville	32	1,611
Bentley-Gladwin	35	766
Buckeye-Wicklund-Oard	401	9,796
Ogemaw	233	2,953
Secord-Gladwin	2	0
Adams-Arenac	12	135
Clayton-Arenac	51	2,617
Tuscola	1	0
Saginaw Area	59	79
Birch Run	25	46
Dundee-Monroe	3	14
Montcalm County	56	461
Allegan County	235	4,274
Muskegon	82	91
Kent County	2	89
Van Buren County	111	14,574
Total	2,167	56,183



Model 35-E 6 cylinder Diesel on pump drive of JM Drilling Rig

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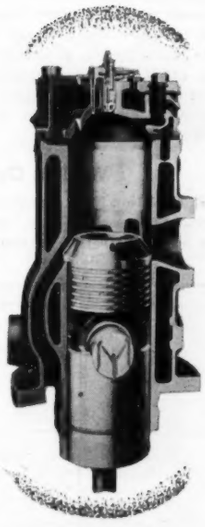

Cut-away view showing air passages and back-flow scavenging arrangement. Note simplicity with absence of intake and exhaust valves.

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"SERVING THE OIL AND GAS INDUSTRIES"

Kansas Developments

By
DAL DALRYMPLE

Wildcat Near Boyd in Barton County Uncovers Production

A pool opener was completed in Barton County, Kansas, at Long & Johnson No. 1 Eveleigh, SW SW NE Section 3-18-14w, near Boyd townsite and about 3 miles west of Hoisington. It found Arbuckle lime at 3,338 feet, was bottomed at 3,367 feet, and made initial potential of 197 bbls. of oil daily. The Hoisington pool, about 6 miles to the northeast, is the nearest producing area.

Opening of a producing area in Stafford County appeared imminent at Virginia Drilling Co. and Sam A. Murphy No. 1 Schlochtermeyer, SE SE NW Section 7-21-11w, about 10 miles northeast of Hudson. It topped Lansing-Kansas City lime at 3,175 feet, Simpson formation 3,448 feet, Arbuckle lime 3,456 feet, and operators recovered an oil-bleeding core at 3,457-63 feet. Seven-inch casing was set at 3,457½ feet, preparatory to testing. Location is on a Stanolind Oil & Gas Co. farmout, 2 miles southwest of the Snider pool, nearest producing area.

Skelly Oil Co. No. 1-B Lunt, C NE Section 18-28-11w, extended the Cairo gas pool in Pratt County one-half mile southeastward. It found Viola lime at 4,263½ feet, total depth 4,278 feet, was acidized with 6,000 and 8,000 gallons in two stages and produced 34,800,000 cu. ft. of gas daily. Location is about 9 miles southeast of Pratt City.

Atlantic Refining Co. was authorized by the Kansas Corporation Commission to repressure by gas or air its wells in the Shallow Water pool, Scott County, a field in which the company owns all production. The eight wells in the pool have total potential of 5,056 bbls. of oil daily. The company also was given conditional permission to repressure a portion of the Wherry pool in Rice County. The Atlantic company owns 42 of 163 wells in the field.

Wildcat Operations

K. F. Nelson No. 1 Polcyn, SW cor. Section 31-13-15w, wildcat in Russell County, topped Lansing-Kansas City lime at 3,103 feet, conglomerate 3,348 feet, Arbuckle lime 3,369 feet, total depth 3,391 feet, plugged back to 3,164 feet, acidized with 3,000 gallons, recovered a part of the load and was dry and abandoned. Showings of oil were found at 3,130-34 feet, increasing oil at 3,124-37 feet, and at 3,152-55 and 3,171 feet.

Cox & McGinnis and Saco Oil Co. No. 1 Jolliffe, C S half SW SE Section 2-22-5, wildcat southeast of the Florence area in southeastern Marion County, topped Mississippi lime at 2,505 feet, the hole filled with water and it was abandoned at 2,808 feet, total depth.

Arthur Brewer & B. B. Blair No. 1 Miller, NE NW NE Section 13-32-5, Cowley County wildcat, topped Bartlesville sand at 2,965 feet, Mississippi lime 3,068 feet and was dry and abandoned at 3,075 feet, total depth.

Barnsdall Oil Co. No. 1 Snodgrass, NW NW SE Section 36-30-6, wildcat in Cowley County, found Mississippi lime at 2,900 feet, had slight showings of oil at 2,900-06 feet and 2,916-20 feet, water introduced at 2,965-70 feet, and it was dry and abandoned at 3,000 feet, total depth.

Hay, Hall and Table Mesa Oil Co. No. 1 Ferrell ranch, SW NW NE Section 28-28-8, wildcat in Butler County, was rigging up machine.

Mead Brothers No. 1 Julian, NE SE NW Section 16-33-3, new Cowley County wildcat, had a fishing job at 1,768 feet.

Stafford County

E. H. Moore, Inc., No. 6 Johnson, SW SE NE Section 13-24-11w, Zenith pool, Stafford County, found Misener sand at 3,783-94 feet, total depth, flowed 217 bbls. of oil in four hours and made potential of 3,509 bbls.

Same operator's No. 1 Johnson, SW NW NE Section 13-14-11w, pumped and flowed 43 bbls. of oil in four hours from Misener sand at 3,763-78 feet, and made potential of 101 bbls. Total depth was 3,782 feet.

E. H. Moore, Inc., No. 4 Johnson, NE SW NE Section 13-24-11w, pumped and flowed 44 bbls. of oil in four hours and made potential of 488 bbls., producing from Misener sand at 3,772-91 feet, total depth.

E. H. Moore, Inc., No. 10 Johnson, SW NE SE Section 13-24-11w, had Misener sand at 3,803-11 feet, was bottomed at 3,814 feet, plugged back to 3,811 feet, pumped and flowed 21 bbls. of oil in three hours and made daily potential of 46 bbls.

Stanolind Oil & Gas Co. No. 8 Hartnett, NE SE NW Section 13-24-11w, found Misener sand at 3,773-91 feet, total depth, flowed 63 bbls. of oil in four hours and made 24-hour potential of 664 bbls.

Same company's No. 3 Siefkes, SW SW SE Section 34-21-12w, Sittner area, penetrated Arbuckle lime at 3,620-32 feet, total depth, pumped 302 bbls. of oil in eight hours and made potential of 908 bbls. daily.

Barton County

Shell Petroleum Corp. No. 2-B Bitter, SW cor. Section 5-16-13w, South Trapp area, Barton County, found Arbuckle lime at 3,340-49 feet, total depth, pumped 203 bbls. of oil in eight hours and was rated potentially at 610 bbls. of oil daily. Operators plan to retest later with permanent equipment.

Estimated Daily Production

Estimated daily production for Kansas for the week ending February 11, and for the preceding week, was as follows:

	Barrels	
	Feb. 11	Feb. 4
Oxford City	925	950
Burrton	8,725	8,175
Ritz-Canton	4,075	3,950
Graber	2,700	2,900
Hollow-Nikkel	1,750	1,700
Lerado	750	375
Voshell	1,925	1,875
Wellington	2,050	1,975
Ellsworth County:		
Lorraine	1,750	1,175
Other pools	1,015	1,005
Rice-Barton counties:		
Bloomer	1,250	1,900
Chase	3,850	3,975
Geneseo	3,825	3,650
Raymond	775	750
Silica	7,600	8,150
South Silica	1,600	1,725
Keesling	550	950
Miscellaneous Rice	8,015	8,585
Miscellaneous Barton	6,960	6,560
Wherry	3,150	2,700
Russell County	20,875	20,700
Sedgwick County	3,450	3,300
Ellis:		
Bemis	5,175	3,275
Miscellaneous	3,965	2,940
Kingman County	684	850
Stafford County	4,780	3,140
Greenwood County	9,175	8,925
Butler County	19,125	18,875
Other fields	14,131	15,295
Total Kansas	144,600	140,125

Kaiser & Branine No. 2 Hagen, SE SE NW Section 29-20-11w, Hagen pool, topped Arbuckle lime at 3,550 feet and was dry and abandoned at 3,552 feet, total depth.

Shell Petroleum Corp. No. 1 Kowalsky, NE NE SE Section 18-20-11w, set casing and was waiting on cement at 215 feet.

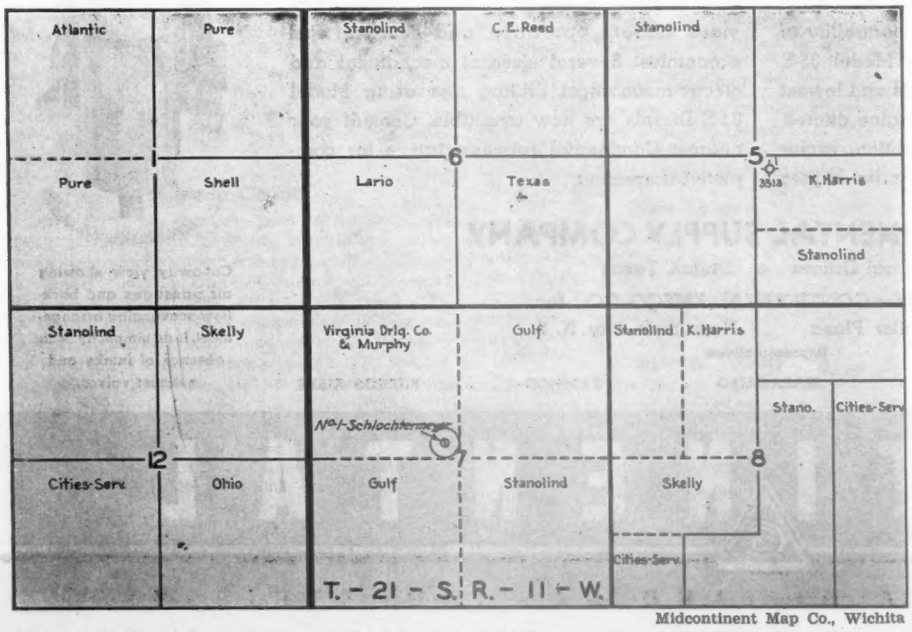
Russell County

Mid-Continent Petroleum Corp. No. 5 Letsch, SE SE NW Section 26-14-14w, Letsch pool, Russell County, had Lansing-Kansas City lime at 2,859-80 feet, total depth, pumped and flowed 996 bbls. of oil in eight hours and made 24-hour potential of 2,988 bbls.

Jones & Shelburne No. 2 Kuhnle, SW SE NW Section 4-15-12w, Greenville area, topped Lansing-Kansas City lime at 3,051 feet, was bottomed at 3,071 feet in lime, pumped 402 bbls. of oil in eight hours and was rated potentially at 1,205 bbls. daily.

Darby Petroleum Corp. No. 11 Michaelis, SW NW SE Section 36-15-14w, Trapp field, was acidized with 3,000 gallons, pumped 517 bbls. of oil in eight hours and made potential of 1,551 bbls. It found Arbuckle lime at 3,301-11 feet, total depth.

J. J. Hall No. 3 Landon, SW SE SE Section 11-15-14w,



Midcontinent Map Co., Wichita

Virginia Drilling Co. and Sam A. Murphy No. 1 Schlochtermeyer, Section 7-21-11w, found saturation in Arbuckle lime and gave promise of opening a new Stafford County pool

was a cellar. Phil-Han Oil Co. No. 1 Dumler, NW NE NW Section 13-14-15w, was building rig.

Cowley County

Hartman & Blair completed a big producer in the Hittle pool, Cowley County, at No. 2 Waite, NE NE SW Section 21-31-4. It found Arbuckle lime at 3,284-91 feet, total depth, flowed 125 bbls. of oil in one hour, and made potential of 3,835 bbls. of oil in 24 hours, pumping and flowing.

Texas Co. No. 8 Hittle, NW NW SE Section 21-34-4. was building rotary rig.

Sedgwick County

S. J. Polhamus No. 1 Lokamp, SW SE NW Section 16-28-1e, Robbins pool, Sedgwick County, found Mississippi lime at 3,071-88 feet, was bottomed at 3,106 feet and plugged back to 3,088 feet. It was treated with 3,000 gallons of acid and pumped 25 bbls. of oil and 25 bbls. of water in 24 hours.

Reno County

Westgate-Greenland Oil Co. No. 1 Hagerty Estate, NE NE SW Section 36-22-5w, Buhler pool, Reno County, was completed in Simpson sand at 3,928-31 feet, total depth. It pumped 126 bbls. of oil in three hours and made initial potential of 626 bbls. It extends the pool one-half mile to the southwest and necessitates the drilling of three offsets.

Same company's No. 1 Johns, SE SE SW Section 25-22-5w, and Sinclair Prairie Oil Co. No. 1 Schroeder NW NW SE Section 36-22-5w, were cellars.

Butler County

Isidor Molk No. 1 Wagner, NE SE SW Section 29-26-6, Garden area, Butler County, found Mississippi lime at 2,758-68 feet, total depth, was acidized with 2,000 gallons and pumped 75 bbls. of oil in 24 hours.

H. Faulders No. 1 Robinson, SE cor. Section 18-25-5, Eldorado field, had sand pay at 734-42 feet, total depth 794 feet, plugged back to base of pay, and was estimated good for 2 bbls. of oil, with 6 bbls. of water, daily.

Richie and others No. 1 Kimball, NW SW SW Section 3-27-6, Garden area, was dry and abandoned at 2,475 feet, total depth. It had a small showing of oil in pay at 2,409-19 feet.

National Refining Co. No. 3 Pray, C N half N half SW Section 31-27-3, was a cellar.

Greenwood County

One of the larger producers in Greenwood County in many months was completed at Shaffer & Howell No. 23 Imthurn, SE SE NE Section 4-23-13, North Virgil-Lamont area. It found Bartlesville sand at 1,573-1,626 feet, total depth, pumped 209 bbls. of oil in eight hours and made potential of 626 bbls.

McFall No. 2 Weymire, NW SW NW Section 6-22-12, had a slight showing of oil in sand at 1,765-66 feet, total depth, but was not a completion.

McPherson County

Miller and others No. 1 Decker, NW NW NE Section 2-20-2w, Ritz-Canton field, McPherson County, topped chat at 2,918 feet and was dry and abandoned at 2,956 feet, total depth.

Continental Oil Co. No. 6 Kindblade, C W half E half SW Section 20-21-1w, was a location.

Ellis County

Courtney B. Davis No. 1 Richards, NW NE SW Section 5-11-18w, Richards pool, Ellis County, failed to find production in Simpson formation topped at 3,645 feet, and Arbuckle lime at 3,666 feet, and was dry and abandoned at 3,673 feet, total depth.

Stevens County

Stevens County Oil & Gas Co. No. 1 Beavers, C NW Section 23-34-38w, Hugoton field, Stevens County, was completed for 15,000,000 cu. ft. of gas daily in pay at 2,603-20 feet, total depth.

Ellsworth-Rice Counties

Continental Oil Co. No. 1 Janzen, C W half W half NE Section 27-17-8w, Edwards area, Ellsworth County, was a location.

Same company's No. 2 Rolfs, SW SW NE Section 28-17-8w, was building rotary rig.

McPherson Drilling Co. No. 1 Cramm, SE SE NW Section 15-19-9w, and Gulf Oil Corp. No. 1 Harvey, NW cor. Section 30-20-10w, were locations for new tests in Rice County.

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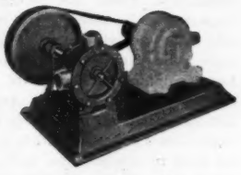

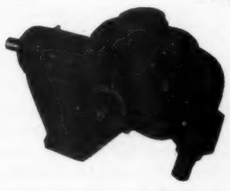

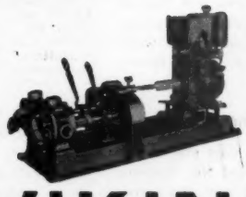

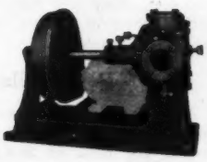

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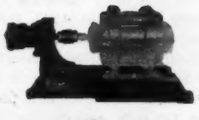

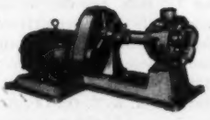

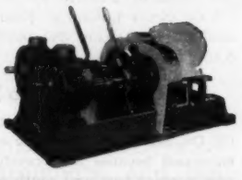

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California Field Report

By
L. P. STOCKMAN

Torrance Field Is Extended; 2 Greeley Tests Show Water

LOS ANGELES, Calif., Feb. 13.—Drilling operations in California in the past week were featured by an extension of the productive limits of the Torrance field of Los Angeles Basin which has been undergoing deep zone exploitation for several months. The extension well was Kovell Oil Co. No. 1 Deep Hole, which was completed flowing 772 bbls. of 28.1-gravity oil per day from 5,163 feet. No. 1 Deep Hole is at 240th and Walnut streets, just over the line in Los Angeles County. Heretofore drilling operations in the Lomita section of the Torrance field have been limited to acreage within the corporate limits of the city of Torrance. This completion extends the productive limits of the Lomita-Eshelman section of the Torrance field about 1,500 feet to the southeast. The gravity of oil, 28.1 degrees, is between 2 and 3 degrees higher than that developed in either the Lomita or Eshelman section of the field and might indicate the existence of a possible fault between the two areas. No. 1 Deep Hole is located about four blocks from the nearest production and its completion has already resulted in the staking of several new locations.

Despite the fact that an operators' committee of the Torrance field recently informed members of the Emergency Executive Committee that deep zone wells in that field declined about 33 per cent within one month of completion and that less than 10 per cent of deep zone wells in the field had so far paid out and further that at least 25 per cent will never pay out operators are still starting new wells with clock-like regularity. About two months ago the Torrance field appeared to be nearing the end of deep zone exploitation but twice since that time the limits of production have been extended and additional acreage opened up for development. Kovell Oil Co.'s new extension well has 363 feet of formation open to production although not all of it is oil sand. Top of the Del Amo zone was logged at 4,995 feet which gives the well 168 feet of oil sand in this zone as well as some thin lenses above 4,995 feet. Four new wells were completed last week in the Eshelman section, and most of them showed satisfactory production.

New Wells in Lomita

At 237th and Walnut streets in the east end of the Lomita district, Bolling Oil Co. completed No. 1 Power flowing 760 bbls. of 26.4-gravity oil per day from 5,166 feet after finishing the hole with a 7-inch water string landed at 4,915 feet and 280 feet of 5½-inch liner including 251 feet of 140-mesh screen. This well, brought in flowing through a 1-inch bean, is an offset of Maldum Oil Co. No. 3 Lomita, a recent completion which showed excellent production and which is flowing 310 bbls. per day through a 15/64-inch bean. Two new wells were completed last week at 237th and Eshelman streets and both registered normal production. These were Maldum Oil Co. No. 4 Lomita completed flowing 496 bbls. of 26.4-gravity oil from 5,171 feet and A. & T. Oil Co. No. 3 Lomita finished flowing 330 bbls. of 25.9-gravity oil from 5,170 feet. Tiger Oil Co. No. 1 Lomita at 236th and Walnut streets was brought in flowing 345 bbls. of 26.3-gravity oil from 5,137 feet.

Montebello Extension

Interest of Montebello operators centered on Union Oil Co. No. 1 Calkins in the east end of the Montebello extension because a successful completion would open new acreage east and south of this location. Operators were disappointed however, because, when the well was swabbed in, it did not show as much gas as had been anticipated and a tank gauge indicated a daily flow of 1,500 bbls. cutting 70 per cent. This well is bottomed in the seventh zone at 7,160 feet but the test made late in the past week only included the Masser or lower finger of the sixth zone. The hole was finished with 912 feet of solid 6⅝-inch liner which was cemented at 6,157 feet and perforated with 131 holes at 6,625-90 feet thus leaving the seventh zone behind the blank pipe untested. In accordance with a movement tentatively approved by operators, the seventh zone will not be produced at present. Efforts are being made to retard development of all zones below the Masser for a period of one year but this program has not been entirely approved.

No. 1 Calkins showed up excellently on a series of formation tests which included the entire interval progressively at several points and the absence of water during these tests tends to indicate that the water now present is probably due to a mechanical condition that can be remedied. The cement job at 7,157 feet proved effective on a water shutoff test.

McVicar & Rood recompleted No. 3 Manz after deepening to the Masser zone at 6,682 feet. This well was originally finished in the second finger of the sixth zone flowing 700 bbls. of 36.3-gravity oil per day from 6,624 feet a few weeks ago but has since been carried down into the Masser zone. Upon being returned to production the well flowed 340 bbls. of clean 36.9-gravity oil and 300,000 cu. ft. of gas per day.

Union Oil Co.'s notice of the annual meeting to be held in Los Angeles March 7, 1939, reveals the fact that the company paid $37,916 for a renewal and extension of drilling and producing rights covering two parcels of the La Merced lease in the Montebello field and an additional $75,000 for a new lease on approximately 560 acres of land located close to the above lease. This report also shows that the company paid a cash bonus of $10,000 for an oil and gas lease on 230 acres of land adjoining Tide Water Associated Oil Co.'s Porter lease in the Aliso Canyon field of Los Angeles County where the latter discovered an oil and gas field a few months ago. Olympic Refining Co. failed to get a satisfactory water shutoff on No. 1 Smith Community which has been carried down into the seventh zone and the hole was recemented through perforations at 7,020 feet.

Wilmington

Three wells were completed in the Long Beach Harbor district of the Wilmington field but none of them registered large production due to the decision of operators to refrain from making potential production tests and the agreement of operators to restrict production to a maximum of 300 bbls. per day. General Petroleum Corp., discoverer of the Wilmington field, completed two new wells and has derricks ready to continue work. The company's No. 12 Southern Pacific flowed 720 bbls. of 22.6-gravity oil per day from 4,105 feet.

On the Harbor Community lease, General Petroleum Corp. completed No. 22 flowing 780 bbls. of 20.8-gravity oil per day from 4,100 feet. General Petroleum Corp.'s next completion in the Wilmington field should be No. 32 Harbor Community which is drilling ahead in the pay. Union Pacific Railroad Co. completed No. 12-E flowing 263 bbls. of clean 20.6-gravity oil per day under restraint from 3,619 feet. Signal Oil & Gas Co. spudded in two of its group of wells that will be drilled into the tidelands in the Long Beach section of the Wilmington field and will probably begin drilling operations on several more within a short time. The company's No. 1-D is making hole below 1,100 feet and No. 2-D

TANKER SHIPMENTS FROM LOS ANGELES TO DOMESTIC AND FOREIGN PORTS

	February 4		January 28			
Intercoastal-domestic—	Total this week	Daily average	Total last week	Daily average	This year to date	Same time last year
Fuel oil	70,385	10,055	.....	.....	132,365	.....
Diesel and gas oil	.....	.....	.....	.....	163,501	.....
Gasoline	.....	.....	.....	.....	129,039	263,604
Kerosene	.....	.....	.....	.....	.....	59,885
Lubricants	.....	.....	.....	.....	37,621	.....
Foreign exports—						
Crude oil	583,989	83,427	125,499	17,928	1,134,833	2,113,533
Fuel oil	117,630	16,804	37,547	5,364	897,836	419,840
Diesel and gas oil	71,427	10,204	25,301	3,614	461,799	327,433
Gasoline	275,179	39,311	.....	.....	739,152	423,478
Kerosene	34,224	4,889	.....	.....	124,563	122,026
Coastwise-domestic—						
Crude oil	53,644	7,663	129,167	18,452	711,864	808,193
Fuel oil	136,366	19,481	251,447	35,921	874,957	1,456,160
Diesel and gas oil	51,973	7,425	70,311	10,044	300,784	163,103
Gasoline	165,077	23,582	227,139	32,448	1,049,126	1,521,267
Kerosene	16,437	2,348	.....	.....	26,379	27,073

TANKER SHIPMENTS FROM SAN FRANCISCO TO DOMESTIC AND FOREIGN PORTS

Intercoastal-domestic—						
Diesel and gas oil	69,550	9,936	.....	.....	69,556	178,662
Lubricants	.....	.....	4,170	596	4,170	.....
Foreign exports—						
Crude oil	162,724	23,246	186,030	26,576	488,307	336,219
Fuel oil	81,591	11,656	98,957	14,137	197,240	26,031
Diesel and gas oil	29,204	4,172	31,459	4,494	64,649	98,893
Gasoline	19,187	2,741	290,416	41,489	360,110	138,473
Kerosene	.....	.....	33,224	4,746	49,227	70,669
Lubricants	.....	.....	2,438	348	3,386	.....
Coastwise-domestic—						
Fuel oil	76,310	10,901	195,155	27,894	850,993	732,296
Diesel and gas oil	20,176	2,882	29,414	4,202	151,986	193,668
Gasoline	209,367	29,910	117,290	16,756	975,819	777,847
Kerosene	.....	.....	18,943	2,706	97,036	99,676

TOTAL TANKER SHIPMENTS FROM CALIFORNIA TO DOMESTIC AND FOREIGN PORTS

Intercoastal-domestic—						
Fuel oil	70,385	10,055	.....	.....	132,365	.....
Diesel and gas oil	69,550	9,936	.....	.....	233,051	178,662
Gasoline	.....	.....	.....	.....	129,039	263,604
Kerosene	.....	.....	.....	.....	.....	59,885
Lubricants	.....	.....	4,170	596	41,791	.....
Foreign exports—						
Crude oil	746,713	106,673	311,529	44,504	1,623,140	2,449,752
Fuel oil	199,221	28,460	136,504	19,501	1,095,076	445,871
Diesel and gas oil	100,631	14,376	56,760	8,109	526,448	426,326
Gasoline	294,366	42,052	290,416	41,489	1,099,262	561,951
Kerosene	34,224	4,889	33,224	4,746	173,790	192,695
Lubricants	.....	.....	2,438	348	3,386	.....
Coastwise-domestic—						
Crude oil	53,644	7,663	129,167	18,452	711,864	808,193
Fuel oil	212,676	30,382	446,602	63,800	1,725,950	2,188,456
Diesel and gas oil	72,149	10,307	99,725	14,246	452,770	356,771
Gasoline	374,444	53,492	344,429	49,204	2,024,945	2,229,114
Kerosene	16,437	2,348	18,943	2,706	123,415	126,749

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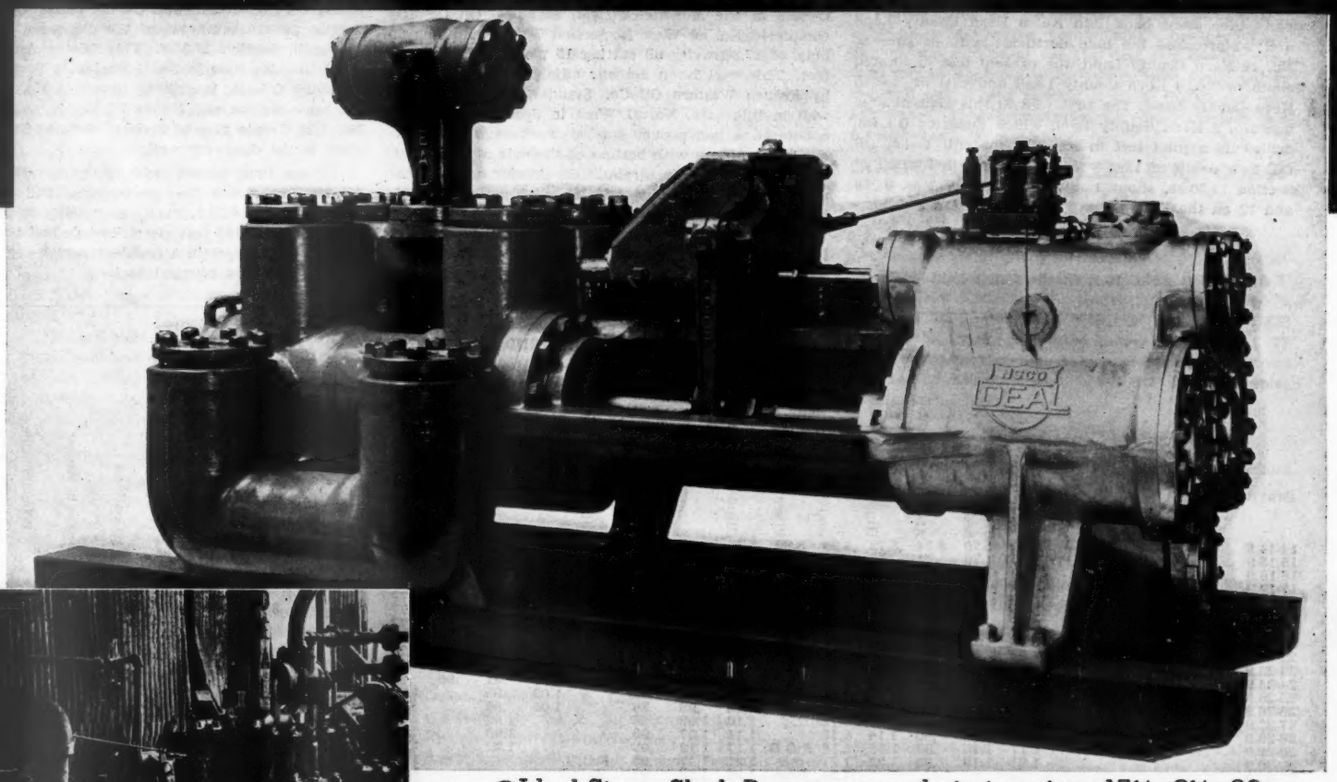

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has just got under way. These wells are located on ground surface provided by Union Pacific Railroad Co. under a compromise made more than a year ago. All wells to be drilled by Signal Oil & Gas Co. will be bottomed beneath the tideland accumulation by directional drilling. About 75 wells are involved. George F. Getty, Inc. has bottomed No. 3-W in the Ford zone with bottom of the hole at 5,690 feet and is preparing to make an early production test. This well, located in the western end of the Wilmington field, was formerly producing from the Ranger zone at 3,575 feet.

Greeley

The Greeley field of Kern County, discovered by Standard Oil Co., took on a rather unfavorable outlook this week due to the failure of two important wells to show commercial production. Standard Oil Co. No. 1 Elrich in Section 20-29-26, found the upper and lower part of the Rio Bravo zone definitely wet. This well logged top of the Rio Bravo zone at 11,550 feet and top of the lower at 11,570 feet. The bit is at present going ahead in a gray sand at 11,619 feet with the outlook none too good. No. 1 Elrich is located about 1,500 feet west of No. 2 Fleishauer which found the Rio Bravo productive but wet. The latter well was drilled to 11,900 feet and then plugged back to 11,590 feet. The company's No. 11-17 Kern County Land in Section 18-29-26, is drilling ahead in the Greeley zone at 7,956 feet but the zone at this point appears to be wet. Two good wells have been completed in Section 18-29-26 since discovery of the field and thus the showing of No. 11-17 is rather surprising. No. 1 Elrich is in the southern end of the field and No. 11-17 is on the northwest plunge. Southeast of the Greeley field, Superior Oil Co. has reached a depth of 11,850 feet in No. 12 Kern County Land in Section 3-30-26 but, with the exception of about 35 feet of oil sand at 11,175 feet, no showings of importance have been logged. This is the third well drilled by Superior Oil Co. in that locality. The first wildcat was No. 9 Kern County Land which went down to 7,870 feet and showed a little production for a few days before going to water. The company then moved southwest and drilled No. 10 Kern County Land but it logged deeper than No. 9 Kern County Land and was suspended. The company then went back into No. 9 Kern County Land and whipstocked the hole northeast without success. No. 12 Kern County Land, the present test, is located south of No. 9 Kern County Land and east of No. 10 Kern County Land. The first well in this general area was No. 8 Kern County Land which Superior Oil Co. drilled as a joint test in conjunction with Union Oil Co. to a depth of 12,618 feet. This well is located in Section 11-30-26, about 1 mile southeast of Nos. 9, 10 and 12 on the Kern County lease in Section 3-30-26.

Canal-Rio Bravo

Ohio Oil Co. No. 10-E in the Canal field of Kern County came in flowing 1,580 bbls. of 36.5-gravity oil a few days ago but the output contained 20 per cent salt water and the company will undertake some remedial work. This well, in Section 14-30-25 and which has an elevation of 225 feet, was bottomed at 8,485 feet but was plugged back to 8,325 feet before the above mentioned test was conducted. The hole was finished with a 7-inch water string cemented at 8,112 feet and 243 feet of 4¾-inch liner including 198 feet of 100-mesh perforations landed at 8,318 feet. Standard Oil Co. has killed No. 1 Rio Bravo fee, a recent completion in the Canal field, and will pull the tubing and rerun it with a packer. This well, judging by its production, which was small and showed a cut of 5 per cent, is probably very close to the edge of the field at that point. No. 1 Rio Bravo fee is located rather far out on the north flank of the structure on property originally purchased by the company as a pump station site. Shell Oil Co. is considering the advisability of drilling entirely through the Stevens zone in No. 61-14-A Kern County Land in Section 14-30-25 before testing. Shell Oil Co. has one other rig erected in the Canal field and is building derrick for No. 23-14-A Kern County Land in Section 14-30-25. In the Rio Bravo field, where the only drilling consists of General Petroleum Corp. No. 1 Caldwell in Section 35-28-25 and No. 3 Van Ness in Section 2-29-25, location has been staked for No. 2 Van Ness in the latter section. No. 2 Van Ness will be a southeast line offset of Union Oil Co. No. 7-34 Kern County Land which found the lower part of the Rio Bravo zone wet and was plugged back to 11,452 feet.

San Joaquin Basin

Drilling operations in the McKittrick field of Kern County resulted in the completion of one small oil well by Standard Oil Co. and one gas well by Hall-Baker Co. The latter was No. 1 Williams in Section 2-30-21 out on the McKittrick front which failed to develop commercial production at 2,493 feet and was plugged back to 1,335 feet. No. 1 Williams which was finished with a 6⅝-inch water string cemented at 1,277 feet and 60 feet of 5-inch liner including 40 feet of 80-mesh perforations and 1,260 feet of 2½-inch tubing came in flowing 1,000,000 cu. ft. of gas per day through a 26/64-inch bean. In the Franco Western section of the McKittrick field, Standard Oil Co. has completed No. 30 West in Section 7-30-22 pumping 80 bbls. of 17.2-gravity oil cutting 15 per cent from 2,203 feet. This well is on acreage adjoining property held by Franco Western Oil Co. Standard Oil Co.'s initial well in this area, No. 31 West in Section 7-30-22, encountered a gas pocket several weeks ago and blew out for two days with bottom of the hole at 2,050 feet. The company has since rebuilt the derrick and has just recovered the drill pipe and landed a string of 13⅜-inch at 351 feet. Union Oil Co. has some acreage north of present work in the McKittrick field and may find it necessary to undertake some offset drilling although no move has yet been made along this line.

No wells were completed in the Southeast Coalinga field this week and, reflecting the restriction in drilling operations, present indications point to a smaller number of completions during the next 30 days.

In the old Coalinga West Side field, General Petroleum Corp. completed No. 103 Esperanza in Section 6-20-25 pumping 21 bbls. of 17.4-gravity oil cutting 21 per cent from 1,318 feet. The productive formation in this area is rather badly depleted and consequently it is impossible to secure large production.

In the Tejon-Grapevine section of Kern County in the extreme southern end of the San Joaquin Basin, the Petrol Corp. has been logging oil and gas showings in the fractured Basalt through which the bit has been drilling for several hundred feet. Work on this well, located in Section 33-11-19, was suspended several months ago when the Basalt was found but was resumed again when a check indicated a possibility that the Basalt may be an intrusion instead of the basement. The bit in this hole is still in Basalt at 7,950 feet but has become much softer due to fracturing and appears to carry a small amount of gas. Tide Water Associated Oil Co. No. 2 S. P. in Section 15-11-19 about 3 miles north of Petrol's test is down 7,208 feet in a hard gray sandstone. Two formation tests on No. 2 S. P. has failed to show anything except some rotary drilling mud. Several wells have been drilled in the Tejon section of Kern County during the past few years but up to date only small production has been developed.

In the Buttonwillow section in the San Joaquin Valley, California Exploration Co. cemented a string of 7⅝-inch casing in No. 1 Salisbury in Section 7-29-24 at 11,472 feet with bottom of the hole at 11,506 feet. This casing has been set for protection against a brown shale that shows a tendency to cave. Drilling operations will be resumed again within a few days. The well is not yet deep enough to hit the zone expected to be productive. This wildcat is considered an important undertaking as it will shed considerable data on the depth of the various formations in the area.

Los Angeles Basin

In the Aliso Canyon field of Los Angeles County, discovered a few months ago by Tide Water Associated Oil Co., Continental Oil Co. staked a location in Section 35-3-18 southeast of the discovery well, No. 1 Porter in Section 27-3-16. Tide Water Associated Oil Co. is making hole in No. 2 Porter in Section 27-3-16, Standard Oil Co. is drilling ahead in No. 1 Ward in the same section and Union Oil Co. is going ahead in No. 1-27 Orcutt also in Section 27-3-16. These are all close to the discovery well.

In the Brea Olinda field of Orange County, Shell Oil Co. completed No. 20 Orange in Section 2-3-10 doing 50 bbls. of 26.1-gravity oil cutting 70 per cent on gas lift from 7,185 feet after the hole had been carried down to 7,984 feet in a fruitless search for deep production and then plugged back.

STANDARD OIL CO. OF CALIFORNIA AND UNION OIL CO.
Crude oil prices at the well effective June 22, 1936

Gravity—	Signal Hill (Long Beach)	Seal Beach	Alamitos Heights	Huntington Beach	Inglewood	Playa del Rey	Olinda-Brea Canyon	Athens-Rosecrans	Dominguez	Ellwood Terrace	Torrance	Richfield	Whittier E. Coyote (La Habra)	Montebello	W. Coyote Hills	Santa Fe Springs	Mountain View	Elk Hills Buena Vista Hills Midway-Sunset Lakeview Area	Lost Hills	Coalinga	Santa Paula*	Wheeler Ridge	Kettleman Hills	Orcutt*
14-14.9	$.80	$.79	$.74	$.78	$.79	$.80	$.76	...	...	...	$.80	$.76	$.76	$.77	$.78	...	...	$.70	$.70	$.70	...	...	$.70	...
15-15.9	.80	.79	.74	.78	.79	.80	.76	...	...	...	.80	.76	.76	.77	.78	...	...	.70	.70	.70	...	...	.70	...
16-16.9	.80	.79	.74	.78	.79	.80	.76	...	...	...	.80	.76	.76	.77	.78	...	...	.70	.70	.70	...	...	.70	$.70
17-17.9	.80	.79	.74	.78	.81	.80	.76	...	...	...	.80	.76	.78	.77	.78	...	...	.70	.70	.70	...	...	.71	.70
18-18.9	.80	.79	.74	.78	.84	.80	.78	...	...	...	.82	.76	.76	.77	.78	...	...	.70	.70	.70	...	...	.73	.72
19-19.9	.82	.79	.74	.82	.87	.84	.81	...	...	...	.85	.76	.78	.77	.78	...	$.70	.74	.74	.71	$.70	...	.75	.74
20-20.9	.85	.79	.74	.85	.90	.88	.84	...	...	...	.88	.78	.82	.77	.80	...	.70	.78	.78	.72	.70	...	.77	.77
21-21.9	.88	.79	.74	.89	.93	.93	.88	...	...	...	.91	.80	.85	.77	.84	$.78	.73	.82	.82	.74	.70	...	.79	.80
22-22.9	.92	.82	.74	.92	.96	.98	.92	...	...	...	.93	.84	.89	.79	.88	.78	.77	.87	.86	.78	.72	...	.82	.83
23-23.9	.95	.86	.77	.96	.99	1.02	.96	$.84	$.79	...	.96	.88	.93	.82	.92	.78	.80	.92	.90	.82	.76	...	.85	.86
24-24.9	.99	.91	.80	1.00	1.02	1.06	.99	.88	.81	...	.99	.91	.96	.85	.96	.82	.84	.97	.94	.86	.79	...	.87	.88
25-25.9	1.03	.95	.82	1.03	1.05	1.11	1.03	.93	.83	...	1.02	.95	...	.89	.99	.86	.88	1.01	.98	.90	.88	...	.90	.91
26-26.9	1.06	1.00	.85	1.07	1.09	1.16	1.06	.98	.86	...	1.05	.98	...	.92	1.03	.90	.91	1.06	1.02	...	...	...	.92	.93
27-27.9	1.10	1.05	.88	1.11	1.12	...	1.10	1.03	.88	...	...	1.02	...	.96	1.06	.95	.95	1.10	1.06	...	...	...	.95	...
28-28.9	1.14	1.10	.90	1.14	1.15	...	1.14	1.07	.90	...	...	1.06	...	.99	1.10	.99	.99	1.15	1.10	...	...	...	.97	...
29-29.9	1.17	1.15	.93	1.18	1.18	F.O.B.	1.17	1.12	.93	...	...	1.09	...	1.03	1.14	1.03	1.02	1.20	1.14	...	...	...	.99	...
30-30.9	1.21	1.19	.95	1.22	1.21	our	1.21	1.17	.95	F.O.B.	...	...	...	1.07	1.17	1.08	1.08	1.25	1.18	...	...	...	1.01	...
31-31.9	...	...	...	...	1.24	Pipe	1.24	1.22	.97	Ship	...	...	...	1.11	1.21	1.12	1.09	1.29	...	...	...	...	...	...
32-32.9	...	...	...	...	1.27	Line	1.27	1.27	1.00	...	...	...	...	1.14	1.25	1.16	1.13	1.34	...	...	...	...	...	...
33-33.9	...	...	...	...	...	...	...	1.32	...	1.28	...	...	...	1.18	1.28	1.20	1.17	1.38	...	...	...	$1.19	...	...
34-34.9	...	...	...	...	...	...	...	1.37	...	1.32	...	...	...	1.22	1.32	1.25	1.20	...	...	...	...	1.23	...	...
35-35.9	...	...	...	...	...	...	...	1.42	...	1.35	...	...	...	1.25	...	1.29	...	...	...	...	...	1.27	...	...
36-36.9	...	...	...	...	...	...	...	1.46	...	1.39	...	...	...	1.29	...	1.33	...	...	...	...	...	1.31	...	...
37-37.9	...	...	...	...	...	...	...	1.51	...	1.43	...	...	...	1.32	...	1.37	...	...	...	...	...	1.35	...	...
38-38.9	...	...	...	...	...	...	...	1.56	...	...	...	...	...	1.36	...	1.42	...	...	...	...	...	1.39	...	...
39-39.9	...	...	...	...	...	...	...	1.61	...	...	...	...	...	1.40	...	...	...	...	...	...	...	1.43	...	...
40-40.9	...	...	...	...	...	...	...	1.66	...	...	...	...	...	1.43	...	...	...	...	...	...	...	...	...	...

Newhall, McKittrick, Kern River, Kern Front and Round Mountain, 70 cents for all grades. *Posted by Union Oil Co. Same company's Brea Canyon schedule stops at $1.14 for 28 degrees and over, and Belridge and Lost Hills schedule stops at $1.32 for 37 degrees and over. By Standard Oil Co., effective October 15: El Segundo, 14 to 18.9 degrees, 80 cents; 19-19.9, 82 cents; 20-20.9, 85 cents; 21-21.9, 88 cents; 22-22.9, 92 cents; 23-23.9, 95 cents; 24-24.9, 99 cents; 25-25.9, $1.03; 26-26.9, $1.06; 27-27.9, $1.10; 28-28.9, $1.14; 29-29.9, $1.17; 30-30.9, $1.21. Wilmington, 14 to 16.9, 75 cents; 17-17.9, 77 cents; 18-18.9, 79 cents; from 19 degrees upward, prices same as Signal Hill.

Texas and Louisiana Gulf

By
NEIL WILLIAMS

West Hackberry, Louisiana, Has New Producing Horizon

HOUSTON, Tex., Feb. 13.—The announcement of several locations in proven and wildcat areas along the Sparta-Wilcox trend, and the opening of new producing horizons in the West Hackberry and Leesville fields, coastal Louisiana, held the attention of operators in the Gulf Coast district in the past week.

Location for two wells were made in the newly opened Eola field, Avoyelles Parish, Louisiana. Sid Richardson is rigging up for No. 2 Haas Investment Co., Section 7-2s-3e, 474 feet northerly from the discovery well, while H. A. Potter and W. T. Moran are moving in material for No. 1 Sentell, Section 5-2s-3e, approximately 1,200 feet northeast of the discovery well.

Sid Richardson No. 1 Haas Investment Co., which opened the first production from Wilcox sand of Tertiary age, in coastal Louisiana, has been officially completed. It had an initial production of 160 bbls. in 24 hours, flowing through an eighth-inch choke with a casing pressure of 1,625 pounds and tubing pressure 1,550 pounds. Continental Oil Co. made a test of the gasoline content of the gas coming from the separator under 150 pounds pressure, and the test showed .36 gallon of gasoline per 1,000 cu. ft. of gas. The Continental Oil Co. plans to lay approximately 10 miles of 6-inch oil line from the Villa Platte field in Evangeline Parish, which will serve the Eola field as a common carrier.

Along this same trend, about 6 miles west of the town of Longleaf, Rapides Parish, Gulf States Exploration Co. staked location for a Wilcox test. The well is located on the Erwin & Bishop lease in Section 35-1n-3w. Several large blocks, reported to have been taken along this trend during the past few weeks, call for early drilling obligations.

In St. Martin Parish, Continental Oil Co. No. 1 Standard Oil Co. of Kansas, an outpost well in the St. Martinsville field, cored sand in shale with an oil odor at 5,866-76 feet, and is coring ahead. The well is in Section 138, and is reported to be running approximately 500 feet higher than the same company's No. 1 fee, which is located in the field proper.

In the Grand Bay field, Plaquemines Parish, Gulf Oil Corp. No. 3 Grand Prairie, Section 6-20s-19e, topped oil sand at 7,129 feet and was completed at a total depth of 7,141 feet, for an initial 24-hour production of 284 bbls., flowing through a quarter-inch choke. In the same parish, and on the Bastain Bay prospect, Gulf Oil Corp. No. 1 L. L. & E. Bastain Bay is coring shale below 8,821 feet. Sand with an oil odor was cored at 7,952-56 feet, and at 8,298-8,300 feet. Location is in Section 43-20s-28e.

West Hackberry's New Pay

Another deep sand in the West Hackberry field, Cameron Parish, was found by Superior Oil Co. No. 5 Benson which is flowing 275 bbls. of 40.2-gravity oil daily through a 9/64-inch choke from sand at 7,880-87 feet. The well is located in Section 30-12s-10w.

In the Leesville field, La Fourche Parish, Texas Co. No. 7 Leesville, Section 27-21s-22e, has apparently opened production from a new sand as a drill-stem test through perforated casing at 8,040-90 feet tested nine stands of pipe line oil. This test was drilled to a depth of 9,723 feet, in salt, which was topped at 9,713 feet.

Fohs Oil Co. No. 7 State, Lake Long field, La Fourche Parish, failed to produce oil in the 9,800-foot horizon, and is preparing to test another showing at approximately 9,100 feet. The well showed gas production in the 9,800-foot horizon, and tested salt water at 9,200-08 feet.

In the Quarantine Bay field, Plaquemines Parish, Gulf Oil Corp. No. 2-A Orleans Levee Board, Section 7-19s-17e, is bottomed at 8,187 feet and is being tested after 7-inch casing was cemented at 8,079 feet.

Atlantic Refining Co. No. 1 Fournerat, North Tepetate field, Acadia Parish, is bottomed at 8,547 feet, and is being completed through perforated casing at 7,983-86 feet. No showing was reported in the 8,400-foot sand. Material is being moved in for No. 4 Klumpp, Section 12-7s-2w.

In the Valentine field, La Fourche Parish, Pan American Production Co. completed a second oil well in the deep sand. Casing was perforated at 9,271-75 feet, and the well flowed 239 bbls. daily through an eighth-inch choke.

Shell Petroleum Corp. No. 2 Jeanerette, the second test in the West Lake Verret field, St. Martin Parish, was completed. It flowed an initial production of 210 bbls. of oil and 360 bbls. of salt water per day through a 15/64-inch choke. The hole is bottomed in sand at 8,057 feet, and 7-inch casing was cemented at 8,040 feet.

In St. Charles Parish, Shell Petroleum Corp. No. 1 Shexnayder, a wildcat in Section 38-12s-15e, is bottomed in sand at 9,773 feet and 9⅝-inch casing is being cemented on bottom. The sand is reported to have carried oil with a salty taste, and the well is expected to be carried deeper before the section is tested. This is the second showing reported. In St. Charles Parish, Texas Co. No. 1 L. & E. Paradis, Section 39-14s-20e, cored to a total depth of 8,975 feet and a protection string of casing is being cemented on bottom.

On the Henderson salt dome, St. Martin Parish, Texas Co. No. 11 St. Martin Land Co., which is attempting to open the first oil production for the structure, is preparing for another production test. The well has pumped several barrels of oil and salt water from perforated casing at 8,060-65 feet. Tubing has been pulled and the hole plugged back to 7,670 feet.

Texas Coast

In the Ace field, Polk County, Texas, Peyton Brothers were testing No. 3-B Kirby Lumber Co. which last week showed evidence of opening Sparta production. After recovering 450 feet of oil on a drill-stem test at 7,735-55 feet, the hole was cored to a total depth of 7,788 feet, and sand and sandy shale showing oil was recovered. Five and one-half inch casing was cemented on bottom and at the close of the week the well was cleaning out through perforated casing at 7,748-62 feet showing wash water and oil.

Offsetting the above well to the south, Shell Petroleum Corp. started drilling No. 1 F. C. Doucette, and staked a location for a second well on the same tract about 500 feet due south. Approximately 1,500 feet due west of Peyton Brothers test, Dick Schwab made a location for another deep test, No. 1-C Kirby-West Lumber Co., in the G. A. Thomas Survey.

Location for another Wilcox test is reported to have been made by Sun Oil Co. in the Call area, Newton County, while in Grimes County, and located on the Carlos prospect, J. H. Coker made a location for No. 1 Fruend in the P. B. O'Connor Survey, about 500 feet north of Holt and others No. 1 Greer, an abandoned hole while flowed a small amount of oil from the Queen City sand at approximately 2,770 feet.

Three wildcat locations were reported in Harris and Brazoria counties. In the Huffsmith area, Harris County, Cron & Gracey and others are rigging up No. 1 R. D. McDonald, a 6,000-foot test in the Lawson Survey. In the same county, in the Mount Houston area, H. C. Cockburn and others staked location for No. 1 Lena Griffith in the Adam Smith Survey, a short distance northweast of Jack Frazier and others No. 1 Griffity, an abandoned hole which flowed some oil from the Frio sand. In the Chocolate Bayou area, Brazoria County, Crosby Drilling Co. made a location for No. 1 George S. Wilson in the A. G. Reynolds Survey, about 2½ miles southeast of a 10,000-foot dry hole, drilled last year by W. V. Bowles and others.

Phillips Petroleum Co.'s attempt to open production from a deep sand in the League City field, Galveston County, failed, as No. 1 Dr. Patton, northeast of production, showed salt water on two drill-stem tests at 10,156-80 feet and at 10,115-27 feet. The perforations have been squeezed off and the well is scheduled to be tested at approximately 9,000 feet. George Echols No. 2 J. H. Ross and Maco Stewart is coring in sandy shale below 9,079 feet after sand and shale showing oil was cored at 8,600, 8,800 and 9,000 feet. Phillips Petroleum Co. No. 1 Stewart Title Guaranty Co. was drilled to a total depth of 9,274 feet. The crew plugged back and sidetracked at 8,674 feet to straighten the hole, which was off vertical 8 degrees. On the west side of the field, Salt Dome Oil Corp. No. 1 J. H. Ross is drilling shale below 9,517 feet and will probably be drilled to below 10,000 feet as no favorable showings have been logged.

Crown Central Petroleum Corp. No. 1 Kyle, Moss Bluff Dome, Liberty County, topped cap rock showing oil at 639 feet and cored to 646 feet. Seven-inch casing was cemented at 639 feet.

Sun Oil Co. No. 1-A Lutcher Moore Lumber Co., Echo prospect, Orange County, which has been flowing oil and salt water for the past two weeks, went dead and is expected to be recompleted. Just before the well quit it was flowing from 90 to 100 per cent salt water. It was originally completed through perforated casing at 8,985-9,010 feet.

COMPLETIONS ON TEXAS GULF COAST IN PROVEN FIELDS

Brazoria County

Danbury field: Kirby Petroleum Co. No. 1 Moller, 2,248 feet, abandoned. Hastings field: Stanolind Oil & Gas Co. No. 32-C Curkett, perforated casing 6,060-78 feet, 550 bbls., quarter-inch choke. Lockridge field: Dr. Charles Lusk, perforated casing 6,354-67 feet, 72 bbls., eighth-inch choke. West Columbia field: Texas Co. No. 30 Abrams, sand 5,574-5,637 feet, 491 bbls., quarter-inch choke.

Chambers County

South Cotton Lake field: Salt Dome Oil Corp. and others No. 3 Lawrence, sand 6,468-95 feet, 132 bbls., eighth-inch choke.

Fort Bend County

Big Creek Dome: N. W. Hunter No. 1 Lighau, 6,149 feet, abandoned. Thompson field: Humble Oil & Refining Co. No. 10-X George, 3,752 feet, abandoned.

Harris County

Clinton field: Stanolind Oil & Gas Co. No. 1-B Oates, 4,608 feet, abandoned. Fairbanks field: Amerada Petroleum Corp. and others No. 2 Ariola, perforated casing 6,836-69 feet, 141 bbls., eighth-inch choke. Amerada Petroleum Corp. and others No. 4 Cougot, perforated casing 6,849-52½ feet, 139 bbls., eighth-inch choke; No. 4 Dawson, 7,005 feet, abandoned; No. 3 Hahl, perforated casing 6,846-49 feet, 164 bbls., eighth-inch choke; No. 8 Mills, perforated casing 6,849-52½ feet, 174 bbls., eighth-inch choke. Amerada Petroleum Corp. No. 2-A Spaulding, perforated casing 6,838-42½ feet, 162 bbls., eighth-inch choke. Noble & Baker No. 5 Hillegeist, 6,849 feet, 148 bbls., eighth-inch choke. H. E. Williams No. 5 Deacon, perforated casing 6,850-56 feet, 545 bbls., quarter-inch choke. Friendswood field: Humble Oil & Refining Co. No. 4-B Humble-

West, sand 5,781-6,043 feet, 573 bbls., quarter-inch choke; No. 5 Whitcomb, sand 5,980-6,046 feet, 573 bbls., quarter-inch choke. Tomball field: Shell Petroleum Corp. No. 2-B Tyson, sand 5,558-70 feet, 511 bbls., quarter-inch choke.

Orange County

Orange field: C. L. Brown No. 2-A Lutcher Moore, sand 5,522-92 feet, 130 bbls., eighth-inch choke. Gulf Oil Corp. No. 3 Orange National Bank, sand 5,905-34 feet, 607 bbls., quarter-inch choke.

Wharton County

Humble Oil & Refining Co. No. 9 Cockburn, 5,539 feet, 96 bbls., eighth-inch choke. Pickett Ridge field: Peyton Brothers No. 1 Duson, perforated casing 4,562-67 feet, gas well.

North Texas Fields

(Continued from Page 104)

dry and abandoned at 3,569 feet. Shell Petroleum Corp. No. 29 H. Hampton, 3,602-3,731 feet, 60 bbls. H. R. Smith No. 14 W. A. Booknight, 3,575-95 feet, 80 bbls.

Gregg County—Kilgore Area

Atlantic Refining Co. No. 23 L. P. Griffin, 3,526-3,611 feet, 46 bbls. Byrd-Frost No. 2 D. Godfrey, 3,558-75 feet, 72 bbls. Texas Co. No. 19 R. B. Walls, 3,638-39 feet, 21 bbls.

Rusk County—Kilgore Area

Shell Petroleum Corp. No. 29 R. Russell, 3,632-3,735 feet, 72 bbls. Tide Water Oil Co. No. 13 L. R. Beall, 3,656-73 feet, 40 bbls. R. G. Trippett No. 5 J. C. Bradberry, 3,648-57 feet, 60 bbls.

Rusk County—Joiner Area

Humble Oil & Refining Co. No. 74-A M. and R. Kangerga, 3,670-3,703 feet, 70 bbls.

Smith County

C. L. McMahon No. 10 S. S. Cook, 3,724-25 feet, 45 bbls.

Upshur County

Dean No. 1-A H. L. Phillips, 3,667-79 feet, 10 bbls.

EAST CENTRAL TEXAS COMPLETIONS

(24-hour tests)

Franklin County

Humble Oil & Refining Co. No. 5-B L. Sims, 4,210-4,311 feet, 89 bbls.

Henderson County

Tide Water-Humble-Seaboard No. 1 S. S. McGee, 8,144-72 feet in the Glen Rose, completed for 436 bbls. of distillate daily.

Houston County

Humble Oil & Refining Co. No. 2 J. M. Burns, 5,792-5,810 feet, 104 bbls.

EAST TEXAS COMPLETIONS

Archer County

Bridwell Oil Co. No. 1 J. S. Bridwell, 1,105 feet, dry. Cochran & Cain No. 1 J. M. Bloodworth, 1,208 feet, dry. H. H. Fraser No. 1 W. R. Hammond, 1,046 feet, dry. A. A. Horwitz No. 9 S. M. J. Benson, 918-34 feet, 75 bbls. W. T. Hutcheson, Jr. No. 6 L. F. Wilson, 625 feet, dry. R. Johnson No. 1 Mrs. G. Williams, 700 feet, dry. Shappell Oil Co. No. 14 G. Bell, 967-82 feet, 50 bbls. L. Sikes and others No. 1 Walter Ford, 4,170-4,437 feet, 245 bbls. in 16 hours. M. L. Threet No. 1 J. H. Roberson, 1,505 feet, dry.

Cooke County

Jack Caudle No. 1 E. E. Walker, 4,383 feet, dry. Joe Beard No. 1 B. Voth, 1,879 feet, dry. Seitz & Comegys No. 2 H. Felderhoff B, 1,180-1,202 feet, 83 bbls.

Clay County

Metzner & Burns No. 14 L. Thornberry, 2,064 feet, dry. Montgomery & Hamilton No. 1 C. A. Woodward, 1,690 feet, dry.

Jack County

Champlin & Bass, Inc. No. 4 S. M. Mantooth, 3,217-60 feet, 350 bbls. George E. Crump No. 3 J. S. Lanier, 500-04 feet, 5 bbls. Curtis and others No. 1 T. R. Ellison, 526 feet, dry. E. B. Evans No. 1 W. M. Johnson, 447-58 feet, 12 bbls. Ohio Fuel Supply Co. No. 1 Edd F. Owens, 3,552 feet, dry.

Montague County

Lobban-Lobban and others No. 1 H. T. Paine, 2,340 feet, dry.

Wichita County

Board of Minerals Developments No. 13 State Lands, 3,655-3,734 feet, 626 bbls. British American Oil Co. No. 2 N. H. Martin, Lease 2, 3,672-3,784 feet, 500 bbls. L. T. Burns No. 27 Sue Mitchell, 288-311 feet, 3 bbls.; No. 28 Sue Mitchell, 282-307 feet, 5 bbls. G. W. Cooper No. 53 J. L. and T. J. Waggoner, 3,731-3,890 feet, 408 bbls. Dorian & Mitchell No. 2 Sue Mitchell B, 3,847-97 feet, 6082 bbls. King Oil and others No. 10 Charles Pettit, 3,758-3,807 feet, 576 bbls. Panhandle Refining Co. No. 4-A Reilly Griffin, 3,746-3,823 feet, 616 bbls. E. W. Whitaker No. 3 S. I. and H. M. Munger, 708 feet, dry.

Young County

Dean Brothers No. 1 J. W. Cox, 600 feet, dry; No. 2 J. W. Cox, 608 feet, dry. W. R. Stafford No. 1 W. E. Foster, 610 feet, dry. R. J. Watson No. 2 B. A. Larimore, 650 feet, dry. Brazos Young Corp. No. 1 A. M. Sloan, 4,802 feet, dry. Christie Brothers No. 2 Annie B. Street, 3,420-36 feet, 40 bbls.

Southwest Texas Fields

(Continued from Page 108)

others No. 23-A Welder, 5,478 feet, 362 bbls., three-sixteenths inch choke.

Hidalgo County

Samfordyce field: Dean & Davis No. 1 F. B. Guerra, 2,886 feet, 82 bbls., three-eighths inch choke.

McMullen County

Ezzell field: E. M. Jones No. 57 Ezzell, perforated casing 1,464-70 feet, 67 bbls., pumping. E. M. Jones No. 58 Ezzell, perforated casing 1,450-55 feet, 63 bbls., pumping; No. 59 Ezzell, perforated casing 1,522-30

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GRIZZLY ROTARY HOSE & ROTARY HOSE COUPLINGS

feet, 71 bbls., pumping; No. 60 Ezzell, perforated casing 1,534-40 feet, 149 bbls., pumping; No. 61 Ezzell, 1,565 feet, 126 bbls., pumping. Munson field: Ohio Fuel Supply Co. No. 4 Nueces Land & Livestock Co., sand 1,198-1,204 feet, 130 bbls., pumping. Simmons Oil Co. No. 6-B McGriff, sand 2,823-32 feet, 102 bbls., jetting.

Jim Wells County

South Alice field: W. G. Coates No. 1-D Stillwell, perforated casing 5,454-60 feet, 94 bbls., eighth-inch choke. R. B. Bryant No. 1 Bankers Mortgage Co., perforated casing 5,333-38 feet, 117 bbls., 7/64-inch choke.

Milam County

Rockdale field: Smith & Thomas No. 22 Coulters, sand 1,050-58 feet, 3 bbls., pumping.

Nueces County

Agua Dulce field: Union Producing Co. No. 1 Brown, perforated casing 4,585-4,603 feet, gas well. North Agua Dulce field: Union Producing Co. No. 3 Simmons, 4,950 feet, abandoned.

Refugio County

La Rosa field: Phillips Petroleum Co. No. 1 Pavelock, perforated casing 6,315-27 feet, 275 bbls., 3/32-inch choke. Tomoconnor field: Quintana Petroleum Co. No. 6 Williams, perforated casing 5,900-06 feet, 682 bbls., quarter-inch choke.

San Patricio County

East White Point field: Humble Oil & Refining Co. No. 1 Speer, 5,665 feet, 166 bbls., 9/64-inch choke. Plymouth Oil Co. No. 2 Ficke, perforated casing 5,626-30 feet, 129 bbls., 7/64-inch choke. Shell Petroleum Corp. No. 3 Kirk, perforated casing 5,625-35 feet, 128 bbls., eighth-inch choke. White Point field: Gage and others No. 1 Dunn, sand 5,672-76 feet, 125 bbls., eighth-inch choke.

Travis County

Kimbro field: J. M. Grimes No. 1 Lundgren, 670 feet, 6 bbls., pumping. Manda field: W. P. and O. A. Wolters No. 1 Morrell, 1,185 feet, abandoned.

Victoria County

McFaddin field: Barnsdall Oil Co. No. 15 McFaddin, sand 4,398-4,415 feet, 161 bbls., jetting.

Webb County

North Killam field: Superior Oil Co. No. 2-C Laurel, 2,606 feet, abandoned. Taylor Refining Co. No. 3 Guerra, 2,080 feet, abandoned.

Zapata County

Comitas field: Nordan & Morris No. 4-C Haynes, sand 1,196-1,217 feet, 40 bbls., pumping. Mirando Valley field: Buffalo Oil Co. No. 1-C Hinnant, sand 1,883-93½ feet, 140 bbls., jetting.

West Texas Fields

(Continued from Page 95)

Kloh, 4,185-4,287 feet, 422 bbls. Gulf Oil Corp. No. 152 Goldsmith, 4,178-4,198 feet, 1,732 bbls.; No. 153 Goldsmith, 4,200-60 feet, 468 bbls.; No. 154 Goldsmith, 4,125-81 feet, 1,296 bbls.; No. 155 Goldsmith, 4,122-93 feet, 840 bbls. Shell Petroleum Corp. No. 4-E University, 3,350-3,640 feet, 1,211 bbls.; No. 7-A Witcher, 3,990-4,190 feet, 2,813 bbls. Skelly and Atlantic No. 1-E University, 3,480-3,652 feet, 548 bbls.

Crane County

Gulf Oil Corp. No. 118 McElroy, 2,715-2,919 feet, 1,026 bbls.

Crockett County

Gilcrease Oil Co. No. 2-15 University, 1,454-75 feet, 70 bbls. Lutex Oil Co. No. 2-17 University, 1,450-86 feet, 104 bbls.

Gaines County

Continental Oil Co. No. 2-52 Wasson, 4,911-83 feet, 1,520 bbls.

Upton County

Gulf Oil Corp. No. 187 McElroy, 2,800-3,188 feet, 337 bbls.

Pecos County

Union Oil Co. No. 4 J. W. Potts, 1,690-1,775 feet, 57 bbls. Wasomes Oil Co. No. 1 B. D. Young, dry and abandoned at 1,864 feet.

Ward County

Columbia Oil & Gas Co. No. 3-C D. L. Johnson, 1,960-2,040 feet, 107 bbls. Gulf Oil Corp. No. 104 Estes, 2,533-2,660 feet, 430 bbls. Gulf Oil Corp. No. 114 Hutchins, 2,520-3,080 feet, 965 bbls.

Yoakum County

Devonian Oil Co. No. 1 W. S. Hodges, 5,000-5,225 feet, 1,986 bbls. Humble Oil & Refining Co. No. 5 Wooten, 4,930-5,130 feet, 746 bbls. Shell Petroleum Corp. No. 1-A Brand, 4,945-5,124 feet, 704 bbls. Texas Co. No. 3 A. B. Smart, 4,923-5,126 feet, 419 bbls.; No. 4 Wooten, 4,935-5,125 feet, 695 bbls.

Retested wells: Gulf Oil Corp. No. 1 C. A. Elliott, T.D. 5,241 feet, 650 bbls. Ohio Oil Co. No. 1 Coffield, T.D. 5,065 feet, 568 bbls. Texas Co. No. 2 Willard, T.D. 5,085 feet, 694 bbls.

WEST CENTRAL TEXAS COMPLETIONS

Jones County

Farris No. 1 Doty, dry and abandoned at 1,745 feet.

B. Fields No. 1 Taylor, 3,208-3,233 feet, 4,536 bbls. King Oil Co. No. 8 Carter, 1,900-25 feet, 326 bbls.

Callahan County

West No. 1 Harwell, dry and abandoned, 818 feet.

Fisher County

General Crude Oil No. 1 Flores, dry and abandoned at 3,540 feet.

Haskell County

Forest Development Co. No. 4 Pardue, dry and abandoned at 2,873 feet.

Taylor County

Cooper No. 2 Bowles, 1,748-55 feet, 9 bbls. Rowan & Nichols No. 1 Martin, dry and abandoned at 2,410 feet. Tal-Vez Oil No. 1 Lindsey, dry and abandoned at 2,404 feet.

Shackelford County

Fox & Rudd No. 2 Shotwell, 1,547-62 feet, 50 bbls.

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In 1933 one of the major oil companies bought two Model LE Case oil field engines, similar to the one shown here. Detailed records were kept for periods of 448 and 607 days (24 hours) respectively. For lubrication and maintenance combined the costs were 27 and 24 cents a day. When inspected recently both these engines were still running "good for many years yet."

Daily attendance is at a minimum with Case engines as all important bearings are oiled from the pressure-pump system. Available with automatic cutouts that shut down instantly if the temperature goes up or oil pressure goes down, they need no frequent watching to guard against mishap or neglect. Case oil field engines are built in 35 and 55 H. P. sizes, and fitted for gasoline, natural gas or butane. Let us tell you about them.

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MUD LINE

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Write for full details.

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ABERCROMBIE PUMP CO.
GULF BLDG. HOUSTON TEX.

Green No. 1 Walker, dry and abandoned at 780 feet. Hart No. 2 Saunders, dry and abandoned at 650 feet. Street Loan & Investment Co. No. 1 Sedwick, dry and abandoned at 370 feet. West No. 1 Kinder, dry and abandoned at 940 feet.

PANHANDLE FIELD COMPLETIONS

(24-hour tests)

Carson County

Ev-War Oil Co. No. 3 B. F. Block, 2,990-3,110 feet, 459 bbls.

Gray County

Mansten Oil Co. No. 5 Sullivan, 3,117-3,232 feet, 342 bbls. Phillips Petroleum Co. No. 4 B. McKinney, 3,148-3,260 feet, 227 bbls. F. H. Yealy No. 3 William Crank, 3,196-3,205 feet, 20 bbls.

Hutchinson County

Paloma Oil No. 5 T. D. Lewis, 2,935-3,015 feet, 751 bbls. Stansylvania Oil Co. No. 8 R. L. Stansberry, 2,992-3,045 feet, 440 bbls.

Illinois Fields

(Continued from Page 87)

to 2,148 feet and shot with 5 quarts at 2,133-45 feet, cleaning out. Cameron and others No. 1 Dolly Hess, NE cor. NW NE Section 19-1n-2e, rigged up rotary and shut down.

In St. Clair County, Badger Oil & Gas Co. No. 1 Reichart, NE cor. NW NE Section 3-1s-10w, total depth 815 feet, will acidize with 1,000 gallons.

In Jefferson County, V. O. Lewis No. 1 Bates, NE cor. NW NE Section 18-1s-1e, total depth 1,805 feet, waiting for favorable weather to move in rotary. Transcontinental Oil Co. No. 1 S. W. Carroll, SE NE SE Section 16-2s-1e, Cypress at 1,843 feet, drilling at 1,892 feet. Midfield Oil Co. No. 1 R. T. Ervin, SW cor. SE SE Section 24-2s-1e, total depth 2,333 feet, plugged back to 2,227 feet to test Roseclaire. Bailed down and the hole filled 300 feet with fluid in 13 hours, but there was only a scum of oil, testing. Beavers No. 2 Eichman, NW NE NE Section 28-2s-1e, total depth 2,285 feet, plugged back to 2,263 feet and acidized with 500 gallons. Five-inch casing set at 2,183 feet, the well pumped water with a showing of oil, testing. McQueen and others No. 1 Sorensen, NE NE NW Section 5-2s-2e, shut down at 1,473 feet. Pyramid Petroleum Co. No. 1 Trout, SW SE SE Section 19-2s-2e, Roseclaire top at 2,356 feet, drilling at 2,382 feet. Palacine Oil Co. No. 1 Ireland Steel Co., C SE NE Section 29-4s-2e, Kincaid at 1,565 feet, drilling at 1,850 feet.

In Wayne County, Morris and others No. 1 Young, SE NW SE Section 29-2s-7e, shut down at 1,980 feet. Carl Robinson No. 1 D. H. Felix, SW SE SE Section 27-2s-8e, McClosky lime at 3,391-3,410 feet, flowed 197 bbls. of oil in five hours through three-quarters inch choke; later flowed 400 bbls. in 12 hours and still later flowed 460 bbls. in 26 hours through three-quarters inch choke, shut in for lack of storage. New Penn Development Corp. No. 1 Wagner, NW SW NE Section 30-2s-9e, total depth 3,441 feet, set 7-inch casing at 3,425 feet, will put on pump. Iroquois Oil & Gas Co. No. 1 Winzenberger, NE SW SE Section 7-3s-9e, drilling at 300 feet.

In Clark County, Leland Wagner No. 1 Baughman, SW cor. NE NW SE Section 20-9n-14w of second principal meridian, shut down at 365 feet.

In Jasper County, National Consumers No. 1 Arthur Meamon, NW SW SW Section 4-8n-14w, drilling at 1,345 feet.

In Montgomery County, R. E. Johnston No. 1 Fuller, SW SW NW Section 7-7n-2w, shut down at 700 feet.

In Bond County, Kesl and others No. 1 Satthoff, NE NE NW Section 12-6n-5w, drilling at 110 feet. R. F. Anderson and others No. 1 Morris, NW NW NW Section 16-6n-3w, shut down at 420 feet. Devonian Oil Co. No. 1 Ambuell, NW SW NW Section 22-6n-4w, shut down at 1,120 feet. Reisig & Quesenberry No. 1 Wilderman, NE NE NE Section 3-6n-3w, shut down at 1,330 feet. J. T. Elmore and others No. 1 J. J. Delmar, SW SE SW Section 13-6n-2w, shut down at 740 feet. Joe Kesl and others No. 1 Myers, NW NE NW Section 13-4n-2w, 5½-inch casing set at 1,400 feet, drilling at 1,406 feet. Lindsey Brothers No. 1 Butler, NE NE SW Section 31-4n-2w, drilling at 2,057 feet. Joseph Kesl, Jr., No. 1 White, SW SE NW Section 17-5n-4w, spudded and shut down.

In Lawrence County, M. G. Johnson No. 1 Downey, C E half SE NW Section 32-3n-11w of second principal meridian, total depth 2,375 feet, and shut down by high water.

In Clinton County, Noelkemper & Murphy No. 1 C. M. Kile, SE cor. NE Section 11-3n-3w, drilling at 735 feet. Kesl and others No. 1 Marbaum, NW NE SE Section 12-3n-3w, will move in machine to clean out. Lindsey Brothers and British American Oil Co. No. 1 Boenhoff, NW NW NE Section 34-3n-4w, drilling at 400 feet. H. Flannery and others No. 1 Charles Geddes, NW NW SE Section 3-2n-2w, total depth 870 feet (corrected), may skid rig because of bad hole. Petroleum Service, Ltd., No. 1 Botts, NW SW SW Section 17-2n-2w, total depth 1,113 feet, will underream 6-inch casing. Claude Bell No. 1 Athoff, NW SE NE Section 8-1n-3w, total depth 825 feet, running 8-inch casing.

In Gallatin County, Bailey & Lucas No. 1 Logan, SE NE NE Section 21-8s-8e, total depth 1,997 feet, underreaming 8-inch casing to 1,987 feet. J. Garfield Buell No. 1 Sutton, C S half NW NW Section 5-8s-10e, shut down at 200 feet because of high water. Coates and others No. 1 Green, SW cor. Section 16-9s-9e, Cypress sand top at 2,215 feet, no oil showing, shut down at 2,323 feet to make repairs.

In Johnson County, Tunnell Hill Oil Co. No. 1 Boner, NE Section 30-11s-3e, shut down at 1,200 feet.

In Massac County, Marshall Drilling Co. No. 1 McGhee, NE NE NE Section 3-16s-5e, spudded and shut down.

In Richland County, Leathers and others No. 1 Yonaka, NW SE SW Section 22-2n-14w, Glen Dean at 2,470 feet, shut down at 2,545 feet.

In Cumberland County, Doran and others No. 1 Haskett, C W half W half W half Section 5-10n-7e, rigged up rotary. Jarvis Brothers No. 1 Wilson Estate, NE NW NW Section 21-10n-7e, drilling at 1,700 feet.

In Clark County, Harry Dunn and others No. 1 H. Medaker, C NE NE Section 7-9n-12w of second principal meridian, rigged up machine and shut down.

In Hamilton County, Helmerich & Payne No. 1 Hamilton Land Bank, SE SE SE Section 6-4s-7e, to set whipstock and drill by bit and three joints of drill pipe.

In Randolph County, Doctor Seward No. 1 Behmer,

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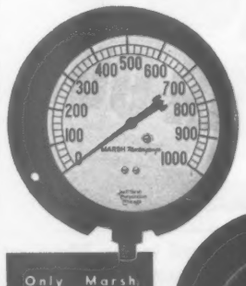

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SE SE NE Section 19-4s-7w, Benoist sand at 335 feet, shut down at 655 feet. Chlorins and others No. 1 Anderson, NW NE NW Section 12-4s-6w, shut down at 1,340 feet. Badger Oil Co. No. 1 Schroeder, SW NW NW Section 27-6s-6w, Trenton lime at 2,260-65 feet, saturated; shot with 140 quarts, cleaning out.

In Perry County, G. H. Blankenship No. 1 Rheinecker, NW NW NE Section 3-6s-4w, spudded.

In Saline County, Carpenter No. 1 Sloan, SE SE SW Section 32-7s-6e, Cypress sand at 2,725 feet, shut down at 2,770 feet.

In Jackson County, Ben Banner No. 1 Dean, NE NE SE Section 33-7s-3w, base of Pennsylvanian at 335 feet, Glean Dean at 699 feet, total depth.

In Washington County, J. L. Henderson, Jr., No. 1 Hornegger, NE NE NW Section 8-3s-1w, Bethel sand at 1,435 feet, water at 1,460 and 1,485 feet, will underream 6-inch to 1,485 feet. Preston Cochrane No. 1 Blankenship, SE SE SW Section 15-2s-3w, drilling at 125 feet.

In Wabash County, Longhorn No. 1 Helm, SE SE NW Section 15-3s-14w of second principal meridian, shut down at 2,430 feet because of high water.

In White County, Robinson and others No. 1 Springer, NE cor. SW NW Section 18-4s-8e, derrick.

In Perry County, H. B. Warren, Jr., No. 1 Winkle Estate, SW SW SW Section 19-4s-3w, spudded and shut down.

In Shelby County, Joe Aylward No. 1 Bickford, NW SW SE Section 7-9n-5e, drilling in sand at 1,971 feet. Corn and others No. 1 Wabash Railroad, C N half N half Section 27-10n-5e, Glen Dean top at 1,639 feet, drilling at 1,710 feet.

In Marion County, Menhall No. 1 I.C.R.R., SW NE NW Section 8-2n-1e, a Devonian lime test, was drilling at 2,740 feet. Graves and others No. 1 Marion County Coal Co., SW SW SW Section 29-2n-1e, set 10¾-inch casing at 80 feet, total depth. A. A. Bowden and others No. 1 Martin, S half SW SW Section 10-2n-2e, drilling at 2,124 feet.

In Wayne County, Thompson Drilling Co. No. 1 Charles Briscoe, C W half SW NW Section 21-2n-7e, drilling at 2,900 feet.

In Fayette County, Sherman and others No. 1-B Garver, SE cor. NE NE NE Section 25-6n-2e, was completed as a gas well at 71 feet. It started at 500,000 cu. ft. per day and settled to 150,000 cu. ft. per day, which will be used as fuel on leases. Martin and others No. 1 Davis (formerly Houston), C SW NE Section 7-5n-1w, drilling at 980 feet. Carnier and others No. 1 Wade, NE NW SE Section 31-5n-4e, spudded and shut down.

In Clay County, Pure Oil Co. No. 1 Gill, C W half NE NE Section 21-2n-8e, set 5½-inch casing at 2,973 feet, swabbing down and cleaning out. Pure No. 1 W. H. Evans, C W half SW NE Section 28-2n-8e, drilling at 1,268 feet. Kingwood Oil Co. and Gulf Refining Co. No. 1 Davis, NW SE SE Section 26-5n-5e, Cypress sand top at 2,228 feet, shut down at 2,378 feet. Burnett and others No. 1 Smith, NE NW SE Section 21-5n-5e, drilling at 100 feet, with 10-inch set at 65 feet. Richard Duncan No. 1 Liggett, SE NW SE Section 17-3n-5e, shut down at 2,356 feet.

CENTRAL OHIO

FINDLAY, Ohio, Feb. 13.—The wildcat test of the Meigs Development Co. in Elizabeth Township, Lawrence County, on the E. S. Culbertson tract in Section 10, had no showings of oil or gas. The Big lime was found from 1,970 to 2,495 feet, and the Medina formation was encountered at 2,750-2,890 feet. The Clinton sand was missing. Total depth 3,000 feet.

Fairfield County, Berne Township, City Natural Gas Works No. 2 John Shonebarger, Section 8, made an open flow of 100,000 cu. ft. of gas at 2,057-71 feet.

Guernsey County, Washington Township, Jones & Jewell No. 1 Vera F. Reed, Section 12, was dry at 1,250 feet.

Knox County, Pike Township, C. O. Moore No. 1 George W. Robinson, Section 17, found the Berea dry, total depth 670 feet.

Hocking County, Green Township, Griffin Producing Co. No. 1 Henry Nutter, Section 30, had an open flow of 850,000 cu. ft. of gas from the Clinton sand at 2,892-2,919 feet.

Licking County, Bowling Green Township, Midland Oil & Gas Co. No. 2 Burge Orr, Section 3, is a gas well with an open flow of 170,000 cu. ft.; Clinton sand 2,968-78 feet. Newark Township, C. A. Davis No. 1 William Clemings, east part of the first quarter, gauged 500,000 cu. ft. of gas from the Clinton sand at 2,511-27 feet.

Miegs County, Rutland Township, Wright and others No. 1 Hurdie Nelson, had 100,000 cu. ft. of gas in the Stray sand at 454-62 feet.

Noble County, Wayne Township, George Jewell No. 1 Muskingum Conservancy District, Section 12, is a small Berea gas well; total depth 1,410 feet.

Washington County, Barlow Township, Ohio Fuel Gas Co. No. 7 Raymond Knoch, made 140,000 cu. ft. of gas from the Berea at 1,832-37 feet. Decatur Township, Bowman Oil & Gas Co. No. 1 Marion Jarvis, Section 5, was dry at 1,100 feet. Liberty Township, Koon Run Oil Co. No. 3 Grover Hendershot, Section 22, is a small gas well in the third Salt sand; the Injun sand was dry, total depth 1,293 feet.

Lima Field

There were no completions in northwestern Ohio. One new test was started in Auglaize County, Clay Township, Section 6, by Ira L. Price on fee property.

In Henry County, Harrison Township, McAfee and others are down 2,380 feet on their test on the Lucy Damon tract in Section 24.

Wood County, Portage Township, Section 5, Goodwill Oil & Gas Co. are drilling below 2,000 feet on the Lester Shinew test.

Eastern Fields

(Continued from Page 93)

will drill a second test on the W. H. and D. M. Bradford farm, elevation 1,015.7 feet.

In Roane County, O. H. Reed and others are testing Salt sand oil in No. 4 P. V. Litton in Harper district.

In Wayne County, A. F. Morris and others made a location on the J. C. and Pearl Farmley farm in Union district, elevation 675 feet. R. H. Adkins and others are down 850 feet on the C. Cyrus farm and the United Fuel Gas Co. had reached 3,250 feet in No. 4824 A. J. Fry.

In Wetzel County the Behron-Goad Co. made a location for No. 3 F. W. and Roy C. Parson farm in Proctor district, elevation 987 feet. J. H. Ferrell is mudding at 2,750 feet in the test on the Cely Montgomery farm.

In Wood County, Mellinger Oil & Gas Co. made location on the John Marshall farm in Union district, elevation 852 feet. In Tyler County, Ohio Oil & Gas Co. is drilling at 1,600 feet on the Clyde Gorrell farm in Meade district.

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Summary of Operations, All Fields, January

Wells Completed

	Comp.	Prod.	Dry	Gas
Penna. Grade fields	250	273	26	50
Lima	4	0	3	1
Central Ohio	61	59	23	33
Kentucky	45	1,014	27	5
Indiana	11	75	4	4
Michigan	83	21,058	39	1
Illinois	303	58,528	41	3
Kansas	69	22,132	18	2
Oklahoma	106	7,935	45	7
No. Central Texas	165	43,477	56	3
West Texas	158	120,678	11	1
Texas Panhandle	35	11,892	5	4
E. Central Texas	22	1,250	11	1
East Texas	94	4,904	1	0
East Texas border	10	1,905	1	1
Gulf Coast Texas	100	24,939	16	7
Southwest Texas	175	18,135	45	5
Gulf Coast La.	52	14,336	16	1
North Louisiana	44	5,890	18	8
Arkansas	30	11,110	8	1
Montana	13	305	4	1
Wyoming	12	209	6	0
Colorado	4	360	3	0
New Mexico	48	21,492	7	1
Total January	1,894	391,956	434	140
Total December	2,011	423,285	457	204
Difference	117	31,329	23	64

Wells Drilling

	Rigs	Drlg.	Ttl.
Penna. Grade fields	63	235	298
Lima	1	6	7
Central Ohio	35	97	132
Kentucky	6	115	121
Indiana	3	35	38
Michigan	25	125	150
Illinois	62	389	451
Kansas	19	153	172
Oklahoma	35	270	305
North Central Texas	94	239	333
West Texas	68	263	331
Texas Panhandle	16	63	79
East Central Texas	4	35	39
East Texas	17	27	44
East Texas border	9	2	11
Gulf Coast Texas	24	100	124
Southwest Texas	36	174	210
Gulf Coast Louisiana	11	108	119
North Louisiana	23	37	60
Arkansas	15	22	37
Mississippi	6	1	7
Alabama	0	1	1
Florida	1	2	3
Montana	0	51	51
Wyoming	4	62	66
Colorado	1	30	31
New Mexico	12	126	138
Utah	1	3	4
Total January	591	2,771	3,362
Total December	589	2,723	3,312
Difference	2	48	50

OKLAHOMA

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Beckham	1	0	0	1	1	0
Caddo	3	27	0	2	4	8
Carter	4	840	2	0	0	7
Choctaw	0	0	0	0	0	1
Cleveland	1	0	1	0	0	4
Coal	2	0	2	0	1	2
Comanche	1	4	0	0	0	2
Cotton	1	0	1	0	0	0
Creek	13	388	5	1	4	36
Garfield	0	0	0	0	0	5
Garvin	0	0	0	0	0	1
Grady	1	105	0	0	0	3
Hughes	3	15	2	0	1	2
Jackson	1	89	0	0	1	6
Jefferson	2	0	2	0	0	2
Kay	1	0	1	0	0	4
Kingfisher	1	0	1	0	0	1
Kiowa	1	0	1	0	0	3
Lincoln	6	922	0	0	2	14
Logan	1	0	1	0	0	2
Marshall	1	0	1	0	0	2
Mayes	1	0	1	0	0	0
McIntosh	1	0	0	1	0	0
Murray	0	0	0	0	0	1
Muskogee	1	0	1	0	0	8
Noble	1	420	0	0	1	2
Okfuskee	2	0	2	0	1	8
Oklahoma	5	268	3	0	0	7
Okmulgee	9	26	5	0	2	24
Osage	7	244	3	0	0	8
Pawnee	3	39	1	0	1	6
Payne	1	0	1	0	0	7
Pittsburgh	2	0	2	0	0	1
Pontotoc	2	135	1	0	5	16
Pottawatomie	18	4,381	1	0	5	35
Sequoyah	0	0	0	0	0	1
Seminole	2	0	1	1	4	22
Stephens	5	32	1	1	0	7
Texas	0	0	0	0	0	2
Tillman	0	0	0	0	0	1
Tulsa	2	0	2	0	2	7
Washita	0	0	0	0	0	2
Ttl. Jan.	106	7,935	45	7	35	270
Ttl. Dec.	150	19,791	46	16	37	269
Difference	44	11,856	1	9	2	1

KANSAS

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Barber	1	0	1	0	0	1
Barton	8	2,581	3	0	3	15
Butler	2	25	1	0	1	7
Coffey	1	0	1	0	0	0
Cowley	6	1,965	3	0	1	12
Dickinson	0	0	0	0	0	1
Ellis	2	963	0	0	1	15
Ellsworth	3	1,026	1	0	0	1
Graham	0	0	0	0	0	2
Greenwood	1	0	1	0	0	8
Harvey	0	0	0	0	0	1
Kingman	0	0	0	0	0	2
Marion	0	0	0	0	0	3
McPherson	4	401	1	0	0	4
Meade	0	0	0	0	0	1
Ness	0	0	0	0	0	1
Osage	0	0	0	0	0	1
Ottawa	0	0	0	0	0	1
Pratt	0	0	0	0	0	2
Reno	0	0	0	0	0	3
Rice	12	5,285	0	0	3	13
Rooks	1	0	1	0	0	3
Russell	14	4,443	2	1	2	24
Saline	0	0	0	0	0	1
Scott	1	749	0	0	0	0
Sedgwick	1	0	1	0	0	5
Stafford	10	4,686	2	0	8	18
Stevens	0	0	0	0	0	2
Sumner	1	8	0	0	0	3
Wabaunsee	0	0	0	0	0	1
Woodson	1	0	1	0	0	2
Ttl. Jan.	69	22,132	18	2	19	153
Ttl. Dec.	120	52,938	26	3	29	148
Difference	51	30,806	8	1	10	5

NORTH AND CENTRAL TEXAS

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Archer	19	2,282	9	0	13	26
Baylor	1	235	0	0	1	2
Brown	10	144	6	1	1	6
Callahan	8	62	6	0	1	7
Clay	8	756	1	0	4	8
Coleman	6	208	4	0	1	8
Comanche	2	0	2	0	0	7
Cooke	7	524	3	0	9	6
Coryell	0	0	0	0	1	0
Denton	0	0	0	0	1	2
Erath	0	0	0	0	0	2
Eastland	3	15	2	0	0	4
Fisher	0	0	0	0	1	2
Foard	0	0	0	0	0	2
Hamilton	0	0	0	0	0	2
Haskell	0	0	0	0	1	3
Hood	0	0	0	0	0	1
Jack	8	991	5	0	3	11
Johnson	0	0	0	0	0	1
Jones	11	3,381	2	0	2	17
Montague	2	650	1	0	2	4
Palo Pinto	2	44	0	1	2	1
Parker	1	0	1	0	0	3
Shackelford	7	30	5	0	3	19
Stephens	0	0	0	0	2	4
Tarrant	0	0	0	0	1	2
Taylor	0	0	0	0	0	5
Throckmorton	0	0	0	0	0	3
Wichita	45	28,112	8	0	32	41
Wilbarger	1	744	0	0	2	3
Wise	0	0	0	0	2	5
Young	24	5,299	1	1	9	32
Ttl. Jan.	165	43,477	56	3	94	239
Ttl. Dec.	175	30,156	86	0	70	212
Difference	10	13,321	30	3	24	27

SOUTHWEST TEXAS

Summary of Field Operations

Field—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Agua Dulce	1	0	1	0	1	1
Alice (S.)	11	413	3	1	3	5
Alta Mesa	0	0	0	0	0	1
Angelita	0	0	0	0	0	1
Batesville	0	0	0	0	0	1
Benavides	5	322	1	0	1	2
Bird Island	0	0	0	0	0	1
Branyon	2	46	1	0	0	1
Callihan	0	0	0	0	0	1
Carroll	0	0	0	0	0	1
Church	1	0	1	0	0	0
Casa Blanca	3	275	0	0	0	3
Cedar Creek	0	0	0	0	1	0
Chicon Lake	0	0	0	0	1	2
Clara Driscoll	3	219	1	0	2	3
Coffey	1	33	0	0	0	1
Comitas	4	218	0	0	0	2
Dale	1	0	1	0	0	1
Darst Creek	2	227	0	0	0	3
Driscoll	2	263	0	0	0	1
Dunlap	1	20	0	0	0	0
Eagle Hill	3	120	1	0	1	1
E. Placedo	1	0	0	1	0	1
Eckert	0	0	0	0	0	1
E. Premont	0	0	0	0	1	0
El Mesquite	1	0	1	0	0	0
Escobas	0	0	0	0	0	1
East White Point	4	577	0	0	2	5
Ezzell	9	525	2	0	0	3
Fitzsimmons	6	746	0	0	1	3
Flour Bluff	0	0	0	0	0	1
Heyser	6	867	0	0	1	3
Hoffman	8	808	0	0	2	4
Junction	1	0	0	1	0	0
Kelsey	3	356	1	0	0	2
Kimbro	0	0	0	0	0	1
Keeran	1	0	0	1	1	0
La Rosa	5	812	0	0	2	4
Longhorn	2	386	0	0	0	3
Luby	1	124	0	0	1	2
Luling	1	25	0	0	1	1
Lundell	5	630	0	1	1	1
McCampbell	10	2,612	0	0	3	20
McFaddin	3	362	0	0	0	2
Mirando Valley	0	0	0	0	0	2
Munson	6	686	0	0	0	1
N. Agua Dulce	0	0	0	0	0	1
O'Hern	1	70	0	0	0	0
N. Killam	1	20	0	0	0	2
Oakville	1	144	0	0	0	1
Palanaga	0	0	0	0	0	1
Piedra De-Lumbre	1	528	0	0	1	1
Plymouth	4	549	0	0	0	1
Premont	1	0	1	0	0	0
Rancho Solo	3	116	1	0	0	2
Refugio	1	168	0	0	0	2
Ricaby	1	225	0	0	0	0
Richard King	0	0	0	0	0	1
Riddle	0	0	0	0	0	2
Riverside	0	0	0	0	0	3
Rockdale	1	0	1	0	0	2
Schattel	2	0	2	0	0	0
Salt Flat	4	134	1	0	2	2
Samfordyce	2	142	0	0	2	4
Saxet	2	208	0	0	0	4
South Clara Driscoll	1	267	0	0	0	1
Somerset	0	0	0	0	0	2
Sisterdale	1	0	1	0	0	0
Stratton	1	50	0	0	0	1
Sun	3	356	0	0	0	3
Tesoro	1	0	1	0	0	1
Tomoconnor	4	3,410	0	0	0	3
Tulsita	1	0	1	0	0	0
Von Ormy	1	3	0	0	0	0
Von Ormy (South)	1	1	0	0	0	0
Yoast	0	0	0	0	0	2
W. Saxet	1	72	0	0	0	2
Walnut Creek	1	0	1	0	0	0
Miscellaneous	21	0	21	0	5	37
Ttl. Jan.	175	18,135	45	5	36	174
Ttl. Dec.	180	18,647	49	8	30	173
Difference	5	512	4	3	6	1

PANHANDLE DISTRICT

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Carson	6	1,519	0	3	2	5
Collingsworth	2	0	2	0	1	2
Deaf Smith	1	0	1	0	0	1
Donley	0	0	0	0	0	2
Dickens	0	0	0	0	0	4
Floyd	0	0	0	0	0	1
Gray	10	4,872	0	1	6	15
Hutchinson	15	5,501	1	0	7	14
Lipscomb	0	0	0	0	0	2
Moore	0	0	0	0	0	8
Potter	0	0	0	0	0	1
Roberts	1	0	1	0	0	2
Wheeler	0	0	0	0	0	6
Ttl. Jan.	35	11,892	5	4	16	63
Ttl. Dec.	34	12,057	0	6	10	68
Difference	1	165	5	2	6	5

WEST TEXAS

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Andrews	9	10,135	2	0	1	14
Brewster	0	0	0	0	0	1
Cochran	1	239	0	0	0	1
Coke	0	0	0	0	0	1
Crane	4	6,150	0	0	2	20
Crockett	1	70	0	0	1	4
Culbertson	1	0	1	0	0	3
Concho	0	0	0	0	0	2
Dawson	0	0	0	0	0	2
Ector	49	48,914	0	0	5	59
El Paso	0	0	0	0	0	1
Gaines	7	7,121	0	0	0	5
Garza	0	0	0	0	0	1
Hockley	1	477	0	0	1	2
Howard	10	11,930	0	0	4	16
Hudspeth	0	0	0	0	0	2
Irion	0	0	0	0	1	1
Kent	0	0	0	0	0	2
Kimble	0	0	0	0	0	2
Loving	0	0	0	0	1	1
Lynn	0	0	0	0	0	1
Martin	0	0	0	0	0	1
Mitchell	1	0	1	0	0	1
Nolan	0	0	0	0	0	2
Pecos	14	2,236	3	0	22	29
Pesido	1	0	1	0	0	2
Reeves	1	0	1	0	0	2
Runnels	0	0	0	0	1	0
Schleicher	1	0	0	1	0	3
Scurry	1	183	0	0	2	4
Stonewall	0	0	0	0	0	2
Sutton	0	0	0	0	1	1
Terrell	0	0	0	0	0	1
Tom Green	0	0	0	0	1	2
Upton	10	5,344	1	0	2	7
Ward	17	5,428	0	0	15	25
Winkler	18	7,236	1	0	3	14
Yoakum	11	15,215	0	0	5	27
Ttl. Jan.	158	120,678	11	1	68	263
Ttl. Dec.	150	117,246	18	2	93	234
Difference	8	3,432	7	1	25	29

EAST TEXAS DISTRICT

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Anderson	3	166	0	1	0	3
Angelina	1	0	1	0	0	0
Cherokee	0	0	0	0	0	1
Collins	1	0	1	0	0	0
Dallas	0	0	0	0	0	1
Falls	2	0	2	0	0	1
Franklin	1	143	0	0	0	4
Freestone	2	369	0	0	0	3
Grayson	3	8	2	0	1	4
Gregg	44	2,392	0	0	7	11
Henderson	0	0	0	0	1	1
Houston	2	176	1	0	1	2
Kaufman	0	0	0	0	1	2
Lamar	0	0	0	0	0	1
Leon	0	0	0	0	0	1
Limestone	0	0	0	0	0	1
McLennan	0	0	0	0	0	3
Morris	1	0	1	0	0	0
Navarro	0	0	0	0	0	1
Rains	0	0	0	0	0	1
Red River	0	0	0	0	0	2
Rusk	36	1,911	1	0	8	9
Smith	5	166	0	0	0	3
Titus	4	388	1	0	0	0
Trinity	0	0	0	0	0	1
Upshur	9	435	0	0	2	4
Van Zandt	2	0	2	0	0	2
Ttl. Jan.	116	6,154	12	1	21	62
Ttl. Dec.	87	5,137	7	3	27	71
Difference	29	1,017	5	2	6	9

TEXAS GULF COAST

Summary of Field Operations

Field—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Ace	0	0	0	0	1	1
Amelia	0	0	0	0	1	1
Anahuac	3	1,972	0	0	0	2
Batson	1	312	0	0	0	1
Bay City	0	0	0	0	1	0
Bammel	2	0	1	1	0	1
Big Creek	0	0	0	0	1	0
Boling	1	0	0	1	0	1
Cedar Point	2	826	0	0	0	1
Clear Lake	2	0	1	1	0	2
Clam Lake	0	0	0	0	0	1
Clinton	0	0	0	0	0	1
Cotton Lake	1	132	0	0	0	1
Cordelle	3	531	0	0	0	2
Danbury	0	0	0	0	0	2
Dickinson	4	1,377	1	0	2	5
Eureka	3	1,170	0	1	0	5
Esperson	1	552	0	0	1	0
Fannett	0	0	0	0	0	1
Fairbanks	19	2,992	0	0	1	13
Friendswood	7	4,217	0	0	2	3
Garwood	0	0	0	0	0	1
Hardin	6	2,347	0	0	1	3
Hastings	5	2,269	1	0	0	2
High Island	1	0	1	0	0	1
Katy	0	0	0	0	0	1
League City	0	0	0	0	0	3
Lockridge	2	237	0	0	0	1
Lovells Lake	0	0	0	0	1	1
Labelle	1	20	0	0	0	0
Magnet	2	252	0	0	1	3
Manvel	0	0	0	0	0	2
McCrosky	1	175	0	0	0	0
Nome	1	275	0	0	0	0
Old Ocean	1	250	0	0	1	4
Orange	2	662	0	0	1	4
Pickett Rdge.	1	108	0	0	0	2
Port Neches	0	0	0	0	1	0
Seabreeze	2	419	0	1	1	1
Segno	3	1,244	0	0	2	2
Spindletop	1	0	1	0	0	2
Spurger	1	525	0	0	0	1
Thompson	3	0	3	0	0	2
Tomball	3	817	0	1	0	2
Turtle Bay	1	114	0	0	1	0
Van Vleck	0	0	0	0	0	1
West Ranch	1	298	0	0	0	1
W. Columbia	2	426	1	0	1	1
Withers	5	420	0	1	2	1
Miscellaneous	6	0	6	0	1	9
Ttl. Jan.	100	24,939	16	7	24	100
Ttl. Dec.	93	25,102	16	3	18	110
Difference	7	163	0	4	6	10

EAST TEXAS BORDER

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas*	Rgs.	Dlg.
Harrison	1	5	0	0	2	0
Marion—Rodessa	8	1,900	0	1	0	2
Marion other	0	0	0	0	3	0
Panola	0	0	0	0	2	0
Sabine	0	0	0	0	1	0
Shelby	0	0	0	0	1	0
San Augustine	1	0	1	0	0	0
Ttl. Jan.	10	1,905	1	1	9	2
Ttl. Dec.	8	1,710	0	2	8	10
Difference	2	195	1	1	1	8

*Gas production: Marion County, 1,000,000 cu. ft.

COASTAL LOUISIANA

Summary of Field Operations

Field—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Abbeville	0	0	0	0	0	0
Bayou Blue	0	0	0	0	0	1
Bancroft	2	462	0	0	1	3
Bateman Lake	1	51	0	0	1	0
Bay St. Elaine	0	0	0	0	0	2
Bayou Boullion	0	0	0	0	0	1
Bayou Cocotriz	1	0	1	0	0	1
Bayou Des Allemands	0	0	0	0	0	1
Black Bayou	0	0	0	0	0	1
Caillou Isld.	0	0	0	0	0	1
Cameron Meadows	0	0	0	0	0	1
Creole	1	320	0	0	0	1
Chacahoula	0	0	0	0	0	2
Charenton	2	252	1	0	0	2
Choctaw	1	389	0	0	0	2
Convent	0	0	0	0	0	1
Darrow	1	681	0	0	0	1
Dog Lake	0	0	0	0	0	1
East Baton Rogue	2	696	0	0	0	2
Edgerly	1	0	1	0	0	1
Eola	1	275	0	0	0	0
Fausse Point	0	0	0	0	0	1
Four Isle	0	0	0	0	0	1
Garden Isld.	0	0	0	0	0	1

Gillis	0	0	0	0	0	1
Golden Meadows	1	216	0	0	0	3
Grand Bay	1	720	0	0	1	1
Hackberry	2	1,499	0	0	0	7
Horseshoe Bayou	0	0	0	0	0	1
Jeanerette	0	0	0	0	0	2
Jefferson Island	0	0	0	0	0	2
Jennings	7	1,555	2	0	2	10
Lafitte	2	2,838	0	0	0	2
Lake Hermitage	0	0	0	0	0	1
Lake Long	0	0	0	0	0	1
Lake Mongoulis	1	59	0	0	0	0
Lake Pelto	0	0	0	0	0	1
Lake Verret	0	0	0	0	0	1
Leesville	0	0	0	0	0	2
Lirette	1	0	0	1	0	1
N. Crowley	1	798	0	0	0	1
N. Tepetate	0	0	0	0	0	2
New Iberia	2	300	1	0	3	1
Port Barre	0	0	0	0	0	2
Potash	1	452	0	0	1	0
Quarantine Bay	2	789	0	0	0	1
Raceland	0	0	0	0	0	1
S. Houma	0	0	0	0	0	1
S. Roanoke	1	160	0	0	0	0
Sorrento	1	0	1	0	0	0
Starks	1	0	1	0	0	0
St. Martinsville	0	0	0	0	0	1
Sweet Lake	1	350	0	0	0	0
Sulfur	1	63	0	0	0	3
Timbalier Bay	0	0	0	0	0	2
Valentine	3	596	1	0	0	1
Venice	0	0	0	0	0	1
Villa Platte	3	815	0	0	0	4
Vinton	0	0	0	0	0	1
W. Gueydan	1	0	1	0	0	0
Woodlawn	0	0	0	0	0	2
Miscellaneous	7	0	7	0	2	20
Ttl. Jan.	52	14,336	16	1	11	108
Ttl. Dec.	46	10,935	13	0	16	107
Difference	6	3,401	3	1	5	1

NORTH LOUISIANA

Summary of Field Operations

Parish—	Comp.	Prod.	Dry	Gas*	Rgs.	Dlg.
Bienville	1	0	1	0	0	1
Bossier	2	10	1	0	1	0
Caddo—Rodessa	1	35	0	1	0	0
Caddo other	17	1,445	6	1	11	13
Caldwell	0	0	0	0	1	0
Catahoula	1	0	1	0	0	0
Claiborne	0	0	0	0	1	0
Concordia	1	0	1	0	0	0
DeSoto	1	0	1	0	1	0
Grant	1	35	0	0	0	0
LaSalle	1	40	0	0	1	1
Madison	1	0	1	0	0	0
Natchitoches	0	0	0	0	0	1
Ouachita	0	0	0	0	1	0
Red River	0	0	0	0	0	2
Sabine	7	135	4	0	3	4
Tensas	0	0	0	0	1	0
Union	2	0	0	2	1	1
Webster	8	4,190	2	4	1	14
Ttl. Jan.	44	5,890	18	8	23	37
Ttl. Dec.	35	3,775	12	9	29	47
Difference	9	2,115	6	1	6	16

*Gas production: Caddo Rodessa, 2,000,000 cu. ft.; Caddo other, 12,000,000 cu. ft.; Union Parish, 41,500,000 cu. ft.; Webster Parish, 20,736,000 cu. ft.

ARKANSAS

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas*	Rgs.	Dlg.
Calhoun	0	0	0	0	1	0
Columbia	2	3,645	0	0	1	7
Craighead	0	0	0	0	1	0
Hot Springs	0	0	0	0	1	0
Lafayette	0	0	0	0	0	2
Lincoln	1	0	1	0	0	0
Little River	1	0	1	0	2	0
Lonoke	1	0	1	0	1	2
Miller—Rodessa	5	1,560	1	0	3	2
Mississippi	0	0	0	0	0	1
Nevada	0	0	0	0	0	2
Ouachita	0	0	0	0	0	1
Pulaski	1	0	1	0	0	0
Union	19	5,905	3	1	5	5
Ttl. Jan.	30	11,110	8	1	15	22
Ttl. Dec.	24	9,315	3	0	19	33
Difference	6	1,795	5	1	4	11

*Gas production: Union County, 2,000,000 cu. ft.

FLORIDA

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Lake	0	0	0	0	1	0
Nassau	0	0	0	0	0	1
Suannee	0	0	0	0	0	1
Ttl. Jan.	0	0	0	0	1	2
Ttl. Dec.	0	0	0	0	2	0
Difference	0	0	0	0	1	2

ALABAMA

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Barbour	0	0	0	0	0	1
Ttl. Jan.	0	0	0	0	0	1
Ttl. Dec.	0	0	0	0	0	1
Difference	0	0	0	0	0	0

MISSISSIPPI

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Calhoun	0	0	0	0	1	0
Clark	0	0	0	0	1	0
Hinds	0	0	0	0	2	0
Simpson	0	0	0	0	2	0
Yalobusha	0	0	0	0	0	1
Ttl. Jan.	0	0	0	0	6	1
Ttl. Dec.	6	0	4	1	6	0
Difference	6	0	4	1	0	1

ROCKY MOUNTAIN AREA

New Mexico

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Bernalillo	0	0	0	0	0	2
McKinley	1	150	0	0	0	3
Rio Arriba	0	0	0	0	0	1
San Juan	2	45	1	0	0	8
San Miguel	0	0	0	0	0	3
Socorro	0	0	0	0	0	1
Torrance	0	0	0	0	0	2
Valencia	0	0	0	0	0	3
Lea	43	21,247	5	1	10	70
Eddy	2	50	1	0	2	28
Chaves	0	0	0	0	0	2
Roosevelt	0	0	0	0	0	1
DeBaca	0	0	0	0	0	2
Total Jan.	48	21,492	7	1	12	126
Total Dec.	58	14,636	5	1	10	140
Difference	10	6,856	2	0	2	14

Colorado

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Adams	0	0	0	0	0	2
Archuleta	0	0	0	0	0	3
Elbert	1	0	1	0	0	0
Fremont	1	0	1	0	0	0
Huerfano	0	0	0	0	0	2
La Plata	0	0	0	0	0	1
Las Animas	0	0	0	0	0	2
Mesa	0	0	0	0	0	1
Moffat	2	360	1	0	0	2
Park	0	0	0	0	0	2
Prowers	0	0	0	0	0	1
Pueblo	0	0	0	0	1	2
Rio Blanco	0	0	0	0	0	1
Routt	0	0	0	0	0	3
Miscel.	0	0	0	0	0	8
Ttl. Jan.	4	360	3	0	1	30
Ttl. Dec.	0	0	0	0	2	34
Difference	4	360	3	0	1	4

Wyoming

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Big Horn	1	0	1	0	0	7
Campbell	0	0	0	0	0	3
Carbon	1	30	0	0	0	3
Converse	1	0	1	0	0	9
Fremont	1	15	0	0	0	5
Lincoln	1	0	1	0	0	1
Natrona	0	0	0	0	0	1
Niobrara	1	140	0	0	1	10
Park	1	0	1	0	0	2
Sublette	0	0	0	0	0	4
Sweetwater	0	0	0	0	0	2
Uinta	0	0	0	0	0	4
Washakie	1	0	1	0	0	1
Weston	4	24	1	0	3	8
Miscel.	0	0	0	0	0	2
Ttl. Jan.	12	209	6	0	4	62
Ttl. Dec.	14	8,630	3	2	1	65
Difference	2	8,421	3	2	3	3

Montana

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Big Horn	0	0	0	0	0	2
Carbon	1	0	1	0	0	7
Fergus	0	0	0	0	0	5
Glacier	5	134	1	1	0	4
Hill	0	0	0	0	0	2
Judith Basin	0	0	0	0	0	1
Petroleum	0	0	0	0	0	3
Teton	0	0	0	0	0	2
Toole	7	171	2	0	0	12
Yellowstone	0	0	0	0	0	1
Miscel.	0	0	0	0	0	12
Ttl. Jan.	13	305	4	1	0	51
Ttl. Dec.	9	365	5	0	2	54
Difference	4	60	1	1	2	3

Utah

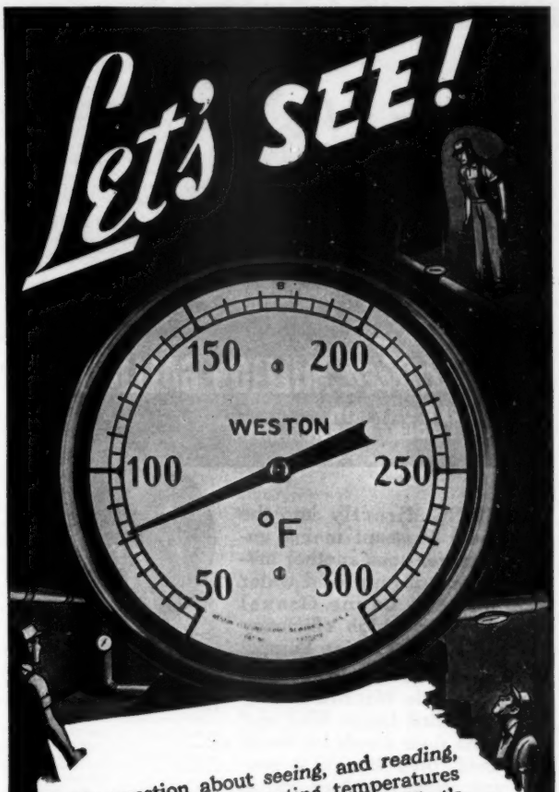
Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Total Jan.	0	0	0	0	1	3
Total Dec.	0	0	0	0	1	3
Difference	0	0	0	0	0	0

EASTERN KENTUCKY

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Lee	2	25	1	0	0	6
Powell	3	18	0	0	0	1
Magoffin	0	0	0	0	0	2
Estill	0	0	0	0	0	1
Martin	2	0	0	2	0	3
Floyd	1	0	0	1	0	7
Pike	0	0	0	0	0	6
Wolfe	0	0	0	0	0	2
Knott	1	0	0	1	0	2
Ttl. Jan.	9	43	1	4	0	30
Ttl. Dec.	15	23	4	6	5	34
Difference	6	20	3	2	5	4



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Other outstanding features:

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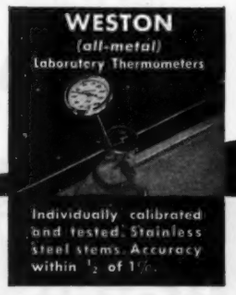

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PER DAY FOR
MOUNT PLEASANT, MICH.

FEEDING directly into the Mount Pleasant mains under pressure, goes another million gallons of pure cold water from the third Layne Gravel Wall Well and high efficiency Layne Vertical Turbine Pump.

More than ten years ago, that thriving little Michigan city bought its first Layne Well and Pump. As their needs for water increased, they bought a second unit. Now the third one is in operation. Such repetition of orders can only denote their experience in satisfaction for which Layne Well Water Systems are world-wide famous.

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While Layne Wells and Pumps serve the largest cities and industries, they are also used by many small towns and manufacturing plants.

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LAYNE

PUMPS & WELL WATER SYSTEMS

For Municipalities, Industries, Railroads, Mines and Irrigation

WESTERN KENTUCKY

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Breckinridge	0	0	0	0	0	2
Butler	5	10	4	0	0	2
Caldwell	0	0	0	0	0	1
Christian	1	0	1	0	0	2
Daviess	14	681	8	0	1	26
Grayson	0	0	0	0	0	2
Hancock	1	0	1	0	0	6
Henderson	4	0	3	1	3	15
Hopkins	0	0	0	0	0	3
Logan	0	0	0	0	0	1
McLean	3	0	3	0	1	5
Muhlenberg	2	275	1	0	1	0
Ohio	6	5	5	0	0	16
Todd	0	0	0	0	0	1
Union	0	0	0	0	0	1
Webster	0	0	0	0	0	2
Ttl. Jan.	36	971	26	1	6	85
Ttl. Dec.	74	3,163	27	2	0	90
Difference	38	2,192	1	1	6	5

INDIANA

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Blackford	0	0	0	0	1	0
Clay	1	0	1	0	0	0
Crawford	0	0	0	0	0	2
Daviess	1	5	0	0	0	1
Dearborn	0	0	0	0	0	1
DuBois	0	0	0	0	0	1
Gibson	0	0	0	0	0	3
Knox	0	0	0	0	0	5
Madison	1	0	1	0	0	0
Martin	0	0	0	0	0	1
Monroe	0	0	0	0	1	0
Orange	0	0	0	0	0	1
Pike	1	0	0	1	0	4
Posey	1	50	0	0	1	1
Shelby	1	0	0	1	0	0
Spencer	0	0	0	0	0	5
Sullivan	4	0	2	2	0	2
Vanderburgh	1	20	0	0	0	2
Vigo	0	0	0	0	0	2
Warrick	0	0	0	0	0	3
White	0	0	0	0	0	1
Ttl. Jan.	11	75	4	4	3	35
Ttl. Dec.	10	455	4	3	0	36
Difference	1	380	0	1	3	1

ILLINOIS

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Bond	0	0	0	0	0	7
Champaign	1	0	1	0	0	1
Clark	0	0	0	0	1	2
Clay	18	4,349	2	0	2	12
Clinton	8	206	1	0	1	30
Coles	5	0	5	0	1	2
Crawford	0	0	0	0	0	3
Cumberland	1	0	1	0	2	2
Edgar	0	0	0	0	0	3
Edwards	1	0	1	0	0	1
Effingham	1	0	1	0	0	0
Fayette	116	24,085	6	1	22	77
Franklin	0	0	0	0	0	1
Fulton	0	0	0	0	0	2
Gallatin	0	0	0	0	1	2
Hamilton	0	0	0	0	0	1
Jackson	0	0	0	0	0	1
Jefferson	10	1,043	5	0	0	12
Jasper	0	0	0	0	0	1
Johnson	0	0	0	0	0	1
Lawrence	3	0	1	2	3	10
Macoupin	0	0	0	0	0	1
Madison	0	0	0	0	0	1
Marion	123	27,348	7	0	18	126
Massac	0	0	0	0	0	1
Menard	0	0	0	0	0	1
Montgomery	0	0	0	0	1	5
Piatt	1	0	1	0	0	0
Pike	0	0	0	0	0	1
Randolph	2	0	2	0	0	0
Richland	0	0	0	0	1	13
Sangamon	0	0	0	0	0	1
Schuyler	1	0	1	0	0	0
St. Clair	2	235	0	0	0	4
Saline	0	0	0	0	0	2
Shelby	1	0	1	0	1	7
Tazewell	0	0	0	0	0	1
Wabash	0	0	0	0	0	4
Wayne	8	1,262	4	0	7	34
Washington	1	0	1	0	0	5
White	0	0	0	0	0	1
Perry	0	0	0	0	1	1
Fulton	0	0	0	0	0	2
Brown	0	0	0	0	0	1
Christian	0	0	0	0	0	1
Hancock	0	0	0	0	0	2
Monroe	0	0	0	0	0	1
Union	0	0	0	0	0	1
Warren	0	0	0	0	0	1
Ttl. Jan.	303	58,528	41	3	62	389
Ttl. Dec.	354	72,741	53	7	50	331
Difference	51	14,213	12	4	12	58

MICHIGAN

Summary of Field Operations

Field—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Adams	0	0	0	0	1	5
Beaverton	0	0	0	0	0	0
Bentley	0	0	0	0	0	2
Bloomingdale	19	6,679	3	0	3	20
Clayton	0	0	0	0	0	1
Columbia	1	50	0	0	1	5
Deerfield	0	0	0	0	0	1
Dorr	2	300	1	0	0	2
Edenville	1	0	1	0	0	0
Edmore	0	0	0	0	0	0
Freeman	13	9,556	2	0	6	22
Grand Rapids	0	0	0	0	0	3
Loomis	1	1,902	0	0	0	2
New Salem	1	175	0	0	3	6
Overisel	2	125	0	0	0	1
Salem	3	598	0	0	1	3
Sherman	0	0	0	0	0	1
Skunk Lake	7	347	5	0	2	7
Stewart	3	689	0	0	0	2
Ravenna	0	0	0	0	0	0
Trowbridge	0	0	0	0	0	2
W. Branch	0	0	0	0	1	2
Winfield	0	0	0	0	1	0
Wisner	1	0	1	0	0	1
Winegars	1	37	0	0	0	1
Buckeye	0	0	0	0	0	0
Wildcats	28	600	26	1	6	36
Ttl. Jan.	83	21,058	39	1	25	125
Ttl. Dec.	64	15,769	28	2	20	111
Difference	19	5,289	11	1	5	14

CENTRAL AND SOUTHERN OHIO

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Ashland	0	0	0	0	0	1
Athens	8	0	2	6	2	4
Belmont	1	0	1	0	0	0
Coshocton	2	30	0	1	1	2
Cuyahoga	3	0	0	3	3	2
Fairfield	1	0	0	1	1	1
Gallia	0	0	0	0	1	0
Guernsey	3	0	1	2	3	7
Hocking	1	0	1	0	0	1
Holmes	2	0	0	2	0	0
Huron	0	0	0	0	0	1
Jefferson	1	2	0	0	0	0
Knox	2	0	1	1	2	9
Lawrence	0	0	0	0	0	4
Licking	8	27	4	1	4	5
Lorain	1	0	1	0	1	2
Medina	1	0	0	1	1	3
Meigs	5	0	2	3	0	4
Monroe	3	0	0	3	0	3
Morgan	4	0	3	1	2	2
Muskingum	2	0	1	1	0	5
Noble	3	0	1	2	2	8
Perry	3	0	1	2	4	2
Richland	0	0	0	0	0	2
Stark	3	0	2	1	4	5
Summit	1	0	0	1	1	2
Tuscarawas	0	0	0	0	0	2
Washington	3	0	2	1	3	18
Wayne	0	0	0	0	0	2
Ttl. Jan.	61	59	23	33	35	97
Ttl. Dec.	75	220	21	47	39	102
Difference	14	161	2	14	4	5

LIMA FIELD

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Auglaize	0	0	0	0	0	1
Greene	0	0	0	0	0	1
Hancock	1	0	1	0	0	0
Henry	0	0	0	0	0	1
Logan	1	0	0	1	0	0
Putman	0	0	0	0	1	1
Seneca	2	0	2	0	0	1
Wood	0	0	0	0	0	1
Ttl. Jan.	4	0	3	1	1	6
Ttl. Dec.	5	0	4	1	1	6
Difference	1	0	1	0	0	0

EASTERN FIELDS

Summary of Field Operations

	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Allegany	23	20	0	0	3	14
Bradford	134	175	0	0	8	43
Middle field	6	5	1	0	5	13
Butler-Armstrong	3	6	1	1	4	12
N. Y.-Pa. gas area	9	0	6	3	10	22
S. W. Pa.	12	5	3	8	4	22
S. E. Ohio	20	43	7	8	5	23
West. Va.	43	19	8	30	24	86
Ttl. Jan.	250	273	26	50	63	235
Ttl. Dec.	220	474	22	80	64	234
Difference	30	201	4	30	1	1

Handbook of Butane And Propane Gases

A revised edition of the "Handbook of Butane and Propane Gases," published in 1935, has been prepared to include practically all of the original pages and three new chapters. The new material includes the design and experience in operating and fuel handling facilities of a metropolitan bus system.

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WILDCAT OPERATIONS

CALIFORNIA

IMPORTANT WELLS AND NORTHERN CALIFORNIA WILDCATS

Company, well, location, and county—	S.T.R.	Depth	Status
Richfield Oil, No. 1 Tinaquaic, Foxen Can., S. B.	36- 9-32	3,990	sd. sh. drlg.
Barnsdall Oil, No. 5 Magenheimer, Gato Ridge, S. B.	9- 8-32	3,502	br. sh. drlg.
United West. Oil, No. 1 Los Olivos, Santa Barbara	16- 7-30	3,340	sd. sh. drlg.
Litho Oil, No. 1 R. I. E., Capitan, Santa Barbara	5- 4-30	363	reaming
West. Oil Roy., No. 1 Bryce, Carpinteria, S. Barb.	29- 4-25	840	sd. sh. drlg.
T.-O. Oil, No. 2 Mdivani, S. B. Mesa, Santa Barbara	28- 4-27	1,500	cleaning out
Garvin & Seaman, No. 1 Gauthier, Summerland, S.B.	22- 4-26	1,458	sd. sh. drlg.
Claran Oil, No. 1 Hardison, Sespe, Ventura	22- 4-20	2,915	idle
Merchants Pet., No. 8 Hillside, Sespe, Ventura	1- 4-20	1,715	sd. sh. drlg.
Ivers, H. A., No. 14 Kentuck, Sespe, Ventura	1- 4-20	822	rained out
St. Louis Oil, No. 1 Creek, Sespe, Ventura	1- 4-20	2,010	O.S. drlg.
Section 20 Oil, No. 1 Sespe, Ventura	20- 5-19	2,530	hd. sd. drlg.
El Rancho Oil, No. 2 Elkins, Shiells Canyon, Vent.	9- 3-19	2,660	sd. sh. drlg.
Continental Oil, No. 10 Grubb, San Miguelito, Vent.	24- 3-24	6,240	O.S. drlg.
C. C. M. Oil, No. 24-B, Hobson, Rincon, Ventura	16- 3-24	4,565	O.S. drlg.
Tide Water A. O., No. 40 V.L.W., Vent. Ave., Vent.	25- 3-23	7,100	O.S. drlg.
Tide Water A. O., No. 14 McGonigle, Vent. Ave., Vent.	23- 3-23	3,984	sd. sh. drlg.
Tide Water A. O., No. 123 Lloyd, Vent. Ave., Vent.	27- 3-23	5,570	cmtd. 4,695
Tide Water A. O., No. 128 Lloyd, Vent. Ave., Vent.	27- 3-23	9,874	hd. sh. drlg.
Tide Water A. O., No. 134 Lloyd, Vent. Ave., Vent.	27- 3-23	8,338	redrlg. 7,960
Tide Water A. O., No. 8 Hartman, Vent. Ave., Vent.	22- 3-23	4,665	sd. sh. drlg.
Shell Oil, No. 98 Taylor, Ventura Ave., Ventura	21- 3-23	5,384	sd. sh. drlg.
Shell Oil, No. 33 Edison, Ventura Ave., Ventura	28- 3-23	5,291	sd. sh. drlg.
Brit. Amer. Oil, No. 7 Bolsa, Ventura Ave., Vent.	22- 3-23	6,770	redrlg. 5,950
Alliance Pet., No. 3 Hisey, Ventura Ave., Ventura	21- 3-23	4,197	sd. sh. drlg.
Lloyd Corp., No. 2 Dabney, Ventura Ave., Ventura	23- 3-23	7,637	sd. sh. drlg.
Cal. Expl., No. 2 Occidental, Lost Hills, Kern	24-26-20	3,783	sd. sh. drlg.
Belridge Oil, No. 35-26-A, North Belridge, Kern	35-27-20	7,940	br. sh. drlg.
Belridge Oil, No. 26-25, North Belridge, Kern	26-27-20	8,500	tested wet
Belridge Oil, No. 26-39, North Belridge, Kern	26-27-20	5,497	br. sh. drlg.
Belridge Oil, No. 28-2, North Belridge, Kern	28-27-20	8,192	br. sh. drlg.
Tide Water A. O., No. 23-3, North Belridge, Kern	22-27-20	5,984	sd. sh. drlg.
Richfield Oil, No. 3, North Belridge, Kern	22-27-20	5,693	br. sh. drlg.
Amerada Pet., No. 6 Beer, Blackwells Cor., Kern	21-26-19	4,030	br. sh. drlg.
Herzog, R. D., No. 1 Den, Devil's Den, Kern	27-25-18	430	idle
Dilamar Oil, No. 3 Quinn, Jasmin, Kern	15-25-27	105	sd. sh. drlg.
Shell Oil, No. 21 Freeman, Round Mountain, Kern	20-28-29	1,915	pump 105 b.d
D. B. K. Co., No. 1 Kern, Kern River, Kern	34-28-28	298	sd. sh. drlg.
Fuhrman, Alfred, No. 11-A Kern, Kern River, Kern	28-28-28	637	dry; abd.
Helm & Smith, No. 12, Kern, Kern River, Kern	34-28-28	471	sd. sh. drlg.
Triad Oil, No. 1 A.H.S., Kern River, Kern	19-28-28	1,072	sd. sh. drlg.
Superior Oil, No. 1 Clerico, Magunden, Kern	26-29-28	3,196	sd. sh. drlg.
Shell Oil, No. 58-29 Glide, West Mount Poso, Kern	29-27-28	2,295	sd. sh. drlg.
Richfield Oil, No. 1, Union Ave., Kern	5-30-28	9,450	sd. sh. drlg.
O'Reily, F., No. 1 Berree, Edison, Kern	5-30-29	3,870	sd. sh. drlg.
Oils, Inc., No. 1 Cauley, Edison, Kern	16-30-29	4,276	P.B. 4,197
Standard Oil, No. 1 Jewett, Arvin, Kern	16-31-29	4,770	sd. sh. drlg.
Texas Co., No. 35-1, KCL, Fruitvale, Kern	35-28-26	7,241	sd. sh. drlg.
Pacific Southwest Oil, No. 1 Dillon, Fruitvale, Kern	27-29-27	3,491	sd. sh. drlg.
Renner, G. E., No. 2 R.H.L., Sivert, Kern	27-30-30	2,600	cleaning out
Hillview Oil, No. 1 Tejon, Caliente Creek, Kern	11-30-30	2,630	hd. sd. drlg.
Continental Oil, No. 4-A, KCL, Wasco, Kern	8-27-24	11,296	hd. sh. drlg.
Standard Oil, No. 2 Mushrush, Wasco, Kern	7-27-24	10,925	hd. sh. drlg.
Standard Oil, No. 8-2-B, KCL, Wasco, Kern	17-27-24	7,960	hd. sh. drlg.
Cal. Lands, Inc., No. 1 Salisbury, Buttonwillow, Kern	7-29-24	11,505	br. sh. drlg.
General Pet., No. 3 Van Ness, Rio Bravo, Kern	2-29-25	10,940	sd. sh. drlg.
General Pet., No. 1 Caldwell, Rio Bravo, Kern	35-28-25	8,351	sd. sh. drlg.
Shell Oil, No. 23-2-A, KCL, Rosedale, Kern	2-29-26	1,784	sd. sh. drlg.
Standard Oil, No. 2 Fleishauer, Greeley, Kern	20-29-26	11,590	will recmt.
Standard Oil, No. 11-16, KCL, Greeley, Kern	20-29-26	10,230	gr. sh. drlg.
Standard Oil, No. 11-17, KCL, Greeley, Kern	18-29-26	7,901	sd. sh. drlg.
Standard Oil, No. 12-6, KCL, Greeley, Kern	30-29-26	7,816	sd. sh. drlg.
Standard Oil, No. 1 Elrich, Greeley, Kern	20-29-26	11,550	br. sh. drlg.
Superior Oil, No. 12, KCL, Greeley, Kern	3-30-26	11,850	sd. sh. drlg.
Shell Oil, No. 6-30-B, KCL, Ten Section, Kern	30-30-26	7,996	sd. sh. drlg.
Shell Oil, No. 61-14-A, KCL, Canal, Kern	14-30-25	8,225	O.S. drlg.
Shell Oil, No. 87-4-B, KCL, Canal, Kern	4-30-25	11,374	sd. sh. drlg.
Ohio Oil, No. 10-E, KCL, Canal, Kern	14-30-25	6,325	completing
Standard Oil, No. 1 Rio Bravo fee, Canal, Kern	12-30-25	8,280	flow 440 b.d.
Richfield Oil, No. 52-32-A, KCL, Tupman, Kern	32-30-25	2,764	sd. sh. drlg.
Union Oil, No. 1-11, KCL, Coles Levee, Kern	11-31-25	2,997	sd. sh. drlg.
Standard Oil, No. 20-1, KCL, Coles Levee, Kern	9-31-25	5,865	sd. sh. drlg.
Ohio Oil, No. 2-F, KCL, Coles Levee, Kern	10-31-25	8,880	sd. sh. drlg.
Honolulu Oil, No. 5-A Vista, Midway-Sunset, Kern	14-32-24	3,024	completing
Fried, Julius, No. 1 Fried, Midway-Sunset, Kern	34-32-24	5,035	redrlg. 4,761
National Oil, No. 32 Midway, Midway-Sunset, Kern	35-32-23	1,040	br. sh. drlg.
Standard Oil, No. 7-30 Western, McKittrick, Kern	7-30-22	2,203	pump 80 b.d.
Standard Oil, No. 7-31 Western, McKittrick, Kern	7-30-22	2,050	cmtd. 351
Westco Pet., No. 1 West, McKittrick, Kern	34-30-22	5,346	fish D.P.
Hall-Baker Co., No. 1 Williams, McKittrick, Kern	2-30-21	2,493	P.B. 1,335
Tide Water A. O., No. 2 S.P., Tejon Ranch, Kern	15-11-19	7,208	hd. sh. drlg.
Petrol Corp., No. 33-5 Reserve, Tejon Ranch, Kern	33-11-19	7,790	basalt; drlg.
Progressive Oil, No. 3, East Coalinga, Fresno	20-19-15	810	br. sh. drlg.
Foreign Oil, No. 6 Annex, West Coalinga, Fresno	6-21-15	1,612	bl. sh. drlg.
Gen. Pet., No. 103 Esperanza, W. Coalinga, Fresno	6-20-15	1,318	pump 20 b.d.
Gen. Pet., No. 104 Esperanza, W. Coalinga, Fresno	6-20-15	1,192	sd. sh. drlg.
Ramsey, W. E., No. 2 Fearon, W. Coalinga, Fresno	18-20-15	4,835	will deepen
Jarvis, L. F., No. 2 Leo, West Coalinga, Fresno	14-20-14	473	sd. sh. drlg.
Amerada Pet., No. 7-17 S.P.L., N. Coalinga, Fresno	17-19-16	5,572	sd. sh. drlg.
Petseahon, No. 35-7-F, S.E. Coalinga, Fresno	7-20-16	2,482	sd. sh. drlg.
Petseahon, No. 71-18-F, S.E. Coalinga, Fresno	18-20-16	8,034	flow 3,617 b.d.
Texas Co., No. 1 fee, S.E. Coalinga, Fresno	6-20-16	2,998	sd. sh. drlg.
Standard Oil, No. 71-13-C fee, S.E. Coalinga, Fresno	13-20-15	3,793	sd. sh. drlg.
Standard Oil, No. 1-17-F, S.E. Coalinga, Fresno	17-20-16	8,015	flow 2,330 b.d.
Superior Oil, No. 3 fee, S.E. Coalinga, Fresno	7-20-16	6,540	sd. sh. drlg.
Superior Oil, No. 4 fee, S.E. Coalinga, Fresno	7-20-16	4,892	sd. sh. drlg.
M. C. A. Drlg., No. 1 Adams, Kreyenhagen, Fresno	33-22-16	1,194	sd. sh. drlg.
K. N. D. A., No. 54-24-H, Kettleman North, Fresno	24-21-16	9,574	sd. sh. drlg.
K. N. D. A., No. 6-16-Q, Kettleman North, Kings	16-22-18	8,185	gr. sd. drlg.
K. N. D. A., No. 47-16-Q, Kettleman North, Kings	16-22-18	2,472	sd. sh. drlg.
K. N. D. A., No. 36-18-Q, Kettleman North, Kings	18-22-18	5,892	br. sh. drlg.
K. N. D. A., No. 78-22-Q, Kettleman North, Kings	22-22-18	7,455	O.S. drlg.
Standard Oil, No. 46-13-H, Kettleman North, Fresno	13-21-16	11,030	dry; abd.
Standard Oil, No. 56-1-P, Kettleman North, Kings	1-22-17	6,973	gr. sh. drlg.
Standard Oil, No. 76-7-Q, Kettleman North, Kings	7-22-18	6,754	br. sh. drlg.
Standard Oil, No. 74-17-Q, Kettleman North, Kings	17-22-18	2,262	sd. sh. drlg.
Cal. Pet. Prod., No. 1 Irons, Cuyama, S. Luis Obispo	19-10-24	1,830	cmtd. 1,500
Epco, Inc., No. 1 Ajax, Union, San Luis Obispo	27-26-13	4,272	sd. sh. drlg.
Page Pet., No. 1 Brint, Summit, San Luis Obispo	10-11-35	1,935	resume work
S. M. Oil, No. 1 Northern, Oakdale, Stanislaus	34- 1-10	2,410	deepening

IMPORTANT WELLS AND SOUTHERN CALIFORNIA WILDCATS

Company, well, location, and county—	S.T.R.	Depth	Status
Antelope Valley Oil, No. 1 Palmdale, Los Angeles	17- 6-12	1,215	sd. sh. drlg.
Texas Co., No. 1 Anderson, Ocean Park, Los Angeles	17- 2-15	7,285	redrlg. 6,480
Rolling Hills Pet., No. 1 Weston, Palos Verdes, L.A.	27- 4-14	5,260	sd. sh. drlg.
A. T. Oil, No. 3 Lomita, Torrance, Los Angeles	23- 4-14	5,171	sd. sh. drlg.
Alford Oil, No. 12 Lomita, Torrance, Los Angeles	23- 4-14	4,851	sd. sh. drlg.
Anderson Oil, No. 1 Lomita, Torrance, Los Angeles	23- 4-14	4,896	O.S. drlg.
Bolling Oil, No. 1 Power, Torrance, Los Angeles	23- 4-14	5,166	flow 760 b.d.
Cinco Oil, No. 1 Woodruff, Torrance, Los Angeles	23- 4-14	3,600	rigged up
Conrell Oil, No. 1 Bush, Torrance, Los Angeles	23- 4-14	2,277	sd. sh. drlg.
Campeet Oil, No. 17-A Kleinmyer, Torrance, L. A.	23- 4-14	3,856	will deepen
Cuba Oil, No. 1 Lomita, Torrance, Los Angeles	23- 4-14	5,165	sd. sh. drlg.
H. D. Oil, No. 1 Lomita, Torrance, Los Angeles	23- 4-14	3,807	rigged up
Hunt. Signal Oil, No. 1 Clarke, Torrance, L. A.	23- 4-14	5,140	flow 375 b.d.
Kern Pet., No. 1 Neher, Torrance, Los Angeles	23- 4-14	4,675	sd. sh. drlg.
Kovell Oil, No. 1 Deep Hole, Torrance, L. A.	23- 4-14	5,167	O.S. drlg.
Maldum Pet., No. 4 Lomita, Torrance, Los Angeles	23- 4-14	5,171	O.S. drlg.
Maldum Pet., No. 5 Lomita, Torrance, Los Angeles	23- 4-14	4,298	sd. sh. drlg.
McCaslin, W. E., No. 1 Springman, Torrance, L. A.	23- 4-14	4,961	O.S. drlg.
Pacific West. Oil, No. 12 Marble, Torrance, L. A.	15- 4-14	3,740	will deepen
Pacific West. Oil, No. 13 Marble, Torrance, L. A.	15- 4-14	4,939	pump 380 b.d.
Paso Oil, No. 1 Lyle, Torrance, Los Angeles	22- 4-14	5,128	pump 90 b.d.
Peters, Roy, Corp., No. 1 Bass, Torrance, L. A.	23- 4-14	2,464	sd. sh. drlg.
Rilling & Co., No. 1 H. & H., Torrance, Los Angeles	23- 4-14	3,471	sd. sh. drlg.
Tiger Oil, No. 1 Lomita, Torrance, Los Angeles	23- 4-14	5,137	flow 310 b.d.
Wilson, Ray, No. 2 Lomita, Torrance, Los Angeles	23- 4-14	5,155	O.S. drlg.
Whit. S. F. S. Synd., No. 2 Lomita, Torrance, L. A.	23- 4-14	4,372	sd. sh. drlg.

KEY TO ABBREVIATIONS USED IN DRILLING REPORTS

Abd., abandoned.
Acd., acidized.
B.O., barrels of oil.
B.P.D., barrels per day.
B.D., barrels daily.
B.P., back pressure.
B.R., building rig.
B. ck., bottom choke.
Br. sh., brown shale.
B.S., basic sediment.
C.&P., cellar and pits.
Cd. or Crd. cored.
C.D., correct depth.
Cg., coring.
Cmtd., cemented.
C.O., cleaning out.
Comp., completed.
Compr., compressor.
C.P., casing pressure, also cement through perforations.
Csg., casing.
D.D., drilling (or drilled) deeper.
Drlg. or Drg., drilling.
Drk. or Dk., derrick.
D.S., drill stem.
D.S.T., drill stem test.
D.&A., dry and abandoned.
Fsg., fishing.
Gbo., gumbo.
G.I., gas injection.
Gr., gravity.
Gr. sd., gray sand.
Grn. sh., green shale.
Hd. sd., hard sand.
H.F.W., hole full of water.
I.P., initial production.
L., lime.
L.D.D., later drilled deeper.
Lnr., liner.
Loc., location.
M.I.M., moving in material.
M.I.R., moving in rig.
M.I.R.T., moving in rotary tools.
M.O.T., milling on tools.
O.I.H., oil in hole.
O.S., oil sand.
O.T.D., old total depth.
O.W.D.D., owell drilling deeper.
O.W.P.B., old well plugging back.
P.B., plugging back.
P.B.P., pulling or pulled big pipe.
P.L., pipe line.
P.L.O., pipe line oil.
Pmpg., pumping.
P.O.P., putting on pump.
P.P., pulled pipe.
Rd. sd., red sand.
Rd. sh., red shale.
Recmt., recemented.
Recvd., recovered.
Rmg., reaming.
Redrlg., redrilling.
Rng., running.
R.O.G., rig on ground.
R.P., rock pressure.
R.U., rigging up.
R.U.R., rigging up rotary.
R.U.S.T., rigging up standard tools.
R.&T., rods and tubing.
S. or Sd., sand.
S.D., shut down.
Sdy. sh., sandy shale.
Sdtrk. or St., sidetracking.
S.D.P.L., shut down for pipe line.
S.D.O., or S.D.W.O., shut down awaiting orders.
S.G., show gas.
Sh.&L., shale and lime.
S.I., shut in.
S.I.P., shut in, prorated.
S.L.M., steel line measurement.
S.O., show oil.
S.O.G.&W., show of oil, gas and water.
Spdg. or Spd., spudding.
S.R., straightreaming.
Stdg., standardizing (also standing)
S.W., salt water.
Swbg., swabbing.
T.A., temporarily abandoned.
Tbg., tubing.
T.D., total depth.
T. ck., top choke.
T.P., tubing pressure.
Tr., tract.
Tstd., tested.
U.R., underreaming.
W.I.H., water in hole.
W.O., workover.
W.O.C., or W.O.C.S., waiting on cement to set.
W.O.O., waiting for orders.
W.P., working pressure.
W.S.O., water shutoff.
W.S.S.O.K., water shutoff O.K.
W.S.R. or W.O.S.R., awaiting standard rig.
Wtr., water.

C. C. M. O. Co., No. 41, Torrance, Los Angeles	14-	4-14	3,740	cleaning out
C. C. M. O. Co., No. 51, Torrance, Los Angeles	14-	4-14	4,740	sd. sh. drlg.
C. C. M. O. Co., No. 12 Kettler, Torrance, L. A.	14-	4-14	3,825	rigged up
General Pet., No. 13 Poggi, Harbor City, Los Angeles	30-	4-13	4,180	sd. sh. drlg.
Texas Co., No. 3 Oakley, Harbor City, Los Angeles	30-	4-13	5,131	O.S. drlg.
Union Oil, No. 66 Callender, Dominguez, Los Angeles	33-	3-13	3,994	sd. sh. drlg.
Union Oil, No. 49 Hellman, Dominguez, Los Angeles	33-	3-13	9,050	sd. sh. drlg.
Shell Oil, No. 12 Reyes, Dominguez, Los Angeles	33-	3-13	3,520	redrlg. 3,394
Shell Oil, No. 97 Reyes, Dominguez, Los Angeles	33-	3-13	8,680	sd. sh. drlg.
Barnsdall Oil, No. 12 Rosecrans, Rosecrans, L. A.	19-	3-13	2,176	sd. sh. drlg.
Bankline Oil, No. 2 Kirby, Rosecrans, L. A.	20-	3-13	6,387	sd. sh. drlg.
Metcalf Oil, No. 1 Bradford, Rosecrans, L. A.	20-	3-13	1,184	sd. sh. drlg.
Union Oil, No. 28 Rosecrans, Rosecrans, L. A.	19-	3-13	7,471	sd. sh. drlg.
Universal Consd., No. 10 Trust, Rosecrans, L. A.	18-	3-13	3,161	sd. sh. drlg.
Isco Pet., No. 2 Abel, Rosecrans, Los Angeles	19-	3-13	7,194	sd. sh. drlg.
Superior Oil, No. 12 Maxwell, Rosecrans, L. A.	19-	3-13	8,852	P.B. 7,696
Howard Oil, No. 1 H.O., Rosecrans, Los Angeles	20-	3-13	1,994	sd. sh. drlg.
Basin Oil, No. 4 Club, Potrero, Los Angeles	34-	2-14	3,094	sd. sh. drlg.
Barnsdall Oil, No. 5 R. S. F., Newhall, L. A.	26-	4-17	5,750	sd. sh. drlg.
Standard Oil, No. 1 Ward, Aliso Canyon, L. A.	27-	3-16	1,200	hd. sh. drlg.
Tide Water A. O., No. 2 Porter, Aliso Canyon, L. A.	27-	3-16	1,000	hd. sh. drlg.
Union Oil, No. 1-27 Orcutt, Aliso Canyon, L. A.	27-	3-16	958	sd. sh. drlg.
Mangrum & Page, No. 1 Lintz, Newhall, L. A.	4-	3-15	212	sd. sh. drlg.
General Pet., No. 22 Harbor, Wilmington, L. A.	2-	5-13	4,100	O.S. drlg.
General Pet., No. 32 Harbor, Wilmington, L. A.	2-	5-13	2,890	sd. sh. drlg.
General Pet., No. 12 S.P., Wilmington, L. A.	2-	5-13	4,105	sd. sh. drlg.
F. A. Pet., No. 1 Franco, Wilmington, L. A.	29-	4-13	3,725	sd. sh. drlg.
McCloskey, E. F., No. 1 Padreson, Wilmington, L. A.	32-	4-13	3,650	O.S. drlg.
Richfield Oil, No. 23 P.D., Wilmington, L. A.	2-	5-13	2,140	sd. sh. drlg.
Richfield Oil, No. 31 P.D., Wilmington, L. A.	2-	5-13	3,175	flow 251 b.d.
Royalty Ser., No. 8-A Nelson, Wilmington, L. A.	4-	5-13	2,598	sd. sh. drlg.
Sonwell Oil, No. 5 Harbor, Wilmington, L. A.	2-	5-13	2,399	sd. sh. drlg.
Union Pacific R. R. No. 99, Wilmington, L. A.	4-	5-13	3,535	O.S. drlg.
Union Pacific R. R., No. 102, Wilmington, L. A.	34-	4-13	2,080	sd. sh. drlg.
Union Pacific R. R., No. 107, Wilmington, L. A.	3-	5-13	2,098	sd. sh. drlg.
Union Pacific R. R., No. 12-E, Wilmington, L. A.	34-	4-13	3,619	flow 260 b.d.
Union Pacific R. R., No. 13-E, Wilmington, L. A.	34-	4-13	2,999	sd. sh. drlg.
Universal Consd., No. 7 Newport, Wilmington, L. A.	2-	5-13	2,850	O.S. drlg.
Grady, R. T., No. 1 Associates, San Pedro, L. A.	23-	5-14	614	cmtd. 415
Ridge Oil, No. 1 Club, Montebello, Los Angeles	3-	2-12	715	cleaning out
Olympic Ref., No. 1 Smith, Montebello, L. A.	2-	2-12	7,136	sd. sh. drlg.
St. Helens Pet., No. 30 Monterey, Montebello, L. A.	2-	2-12	6,160	sd. sh. drlg.
St. Helens Pet., No. 4 Mulholland, Montebello, L. A.	2-	2-12	5,194	sd. sh. drlg.
Standard Oil, No. 2 Braun, Montebello, L. A.	2-	2-12	6,694	O.S. drlg.
Standard Oil, No. 4 Braun, Montebello, L. A.	2-	2-12	6,730	recmtd. 6,644
Standard Oil, No. 5 Braun, Montebello, L. A.	2-	2-12	4,983	cleaning out
Standard Oil, No. 2 Kaufman, Montebello, L. A.	2-	2-12	5,791	sd. sh. drlg.
Standard Oil, No. 2 Harvey, Montebello, L. A.	2-	2-12	5,780	will deepen
Standard Oil, No. 4 Harvey, Montebello, L. A.	2-	2-12	6,320	sd. sh. drlg.
Union Oil, No. 1 Calkins, Montebello, L. A.	2-	2-12	7,160	O.S. drlg.
Union Oil, No. 4 Paul Howard, Montebello, L. A.	2-	2-12	4,980	sd. sh. drlg.
Union Oil, No. 3 Wilcox, Montebello, L. A.	2-	2-12	6,260	sd. sh. drlg.
Union Oil, No. 30 La Merced, Montebello, L. A.	1-	2-12	6,090	sd. sh. drlg.
Stanley Oil, No. 1 Mont., Montebello, L. A.	2-	2-12	4,890	sd. sh. drlg.
Pongratz Oil, No. 1 Newmark, Montebello, L. A.	3-	2-12	6,397	sd. sh. drlg.
Texas Co., No. 5 Mulholland, Montebello, L. A.	2-	2-12	4,298	sd. sh. drlg.
Herley-Kelly, Inc., No. 2 Burke, Montebello, L. A.	2-	2-12	6,360	sd. sh. drlg.
H. & C. Oil, No. 1 Joyce, Whittier, L. A.	22-	2-11	3,330	sd. sh. drlg.
Texas Co., No. 6 Baldwin, Santa Fe Springs, L. A.	6-	3-11	6,739	pump water
Texas Co., No. 1-13-A Smith, Anaheim, Orange	8-	4-10	7,920	sd. sh. drlg.
Brea Canyon Oil, No. 49 Brea, Brea Canyon, Orange	2-	3-10	4,940	sd. sh. drlg.
Shell Oil, No. 20 Orange, Brea Canyon, Orange	2-	3-10	7,185	flow 50 b.d.
Battersby, J. M., No. 1 Associates, Carmenita, Orange	21-	3-11	8,950	recmtd. 8,890
Goodrich Oil, No. 1 Paige, Richfield, Orange	22-	3- 9	3,160	idle
Southwest Expl., No. 7 State, Hunt. Beach, Orange	3-	6-11	3,836	sd. sh. drlg.
Southwest Expl., No. 8 State, Hunt. Beach, Orange	4-	6-11	3,750	sd. sh. drlg.
Southwest Expl., No. 14 State, Hunt. Beach, Orange	10-	6-11	4,838	O.S. drlg.
Dragon Oil, No. 1 Jauman, Hunt. Beach, Orange	10-	6-11	3,487	sd. sh. drlg.
Texas Co., No. 10 Brown, Hunt. Beach, Orange	11-	6-11	2,173	sd. sh. drlg.
Wilshire Oil, No. 2 H.B., Hunt. Beach, Orange	10-	6-11	4,192	redrlg. 3,880
Wilshire Oil, No. 15 H.B., Hunt. Beach, Orange	10-	6-11	4,559	redrlg. 4,130
Patos Drlg., No. 1 Graham, Sunset Beach, Orange	21-	5-11	4,290	hd. sh. drlg.
Continental Oil, No. 41 Bixby, Seal Beach, Orange	11-	5-12	2,090	sd. sh. drlg.
Shell Oil, No. 3 Irvine, Corona Del Mar, Orange	6-	7- 9	1,826	dry; abd.
Dauphin Dev., No. 1 Irwin, Ponto, San Diego	16-12-		4 812	sd. sh. drlg.

KANSAS

Week Ending February 11 (Descriptions are East unless marked otherwise)

Barber County

Barbara Oil Co. No. 1 Wilson, C SE Sec. 17-33-13. Drlg. 2,330 ft.
Olson Oil Co. No. 1 Coffman, C NW NE Sec. 25-31-12w. Drlg 2.63 ft.

Barton County

Amerada Pet. Co. No. 1 Kruckenberger, C NE NE Sec. 14-19-15w. Lans. 3,260 ft.; Arb. 3,572 ft.; T.D. 3,632 ft.; bailed 35 B.O. and C.O. and F. 20 B.O.P.D.
Central Pet. and Vernon O. & G. No. 1 Miller, SE SW SE Sec. 17-16-13w. Drlg. 340 ft.
Gulf Oil No. 1 Louis, C N½ NW SW Sec. 2-20-12w. Arb. 3,347 ft.; R.U.S.T. 3,352 ft.
Long & Johnson No. 1 Eveleigh, SW SW NE Sec. 3-18-14w. Lansing 3,100 ft.; Arb. 3,338 ft.; T.D. 3,367 ft.; P. 66 B. O. in 8 hrs.; pot. 197 B.O.
Paul Martin No. 1-A Feltes, NW SW SE Sec. 8-16-12w. Drlg. 1,240 ft.
I. W. Murfin No. 1 Birzer, NE SW Sec. 21-19-11w. S.D. 2,250 ft.
Sinclair Prairie No. 1-A Pichner, NE SE SE Sec. 10-16-11w. Arb. 3,344 ft.; T.D. 3,371 ft.; P.B. 3,245 ft.; plgd. at 3,103 ft. and filled 525 ft. F.I.H., 50% wtr. S.D.O.

Butler County

Bowland & McCoy No. 1 Frankson, SE SW Sec. 2-29-6. Drlg. 165 ft.
Higgens & Pierce No. 1-A Shrieves, NE NW SE Sec. 2-26-4. S.D. 1,000 ft.

Cowley County

Barnsdall No. 1 Snodgrass, NW SE Sec. 36-30-6. S.S.O. 2,916-20 ft.; T.D. 3,000 ft.; D.&A.
Brewer & Blair No. 1 Miller, NE NW NE Sec. 13-32-5. Bart. sd. 2,925 ft.; Miss. 3,068 ft.; T.D. 3,075 ft.
Ben Graiapp et al No. 1-A Clark, NW NW NE Sec. 11-31-3e. T.D. 3,248 ft.
Phillips Pet. Co. No. 1 Bernard, SE SE NE Sec. 19-33-6. Drlg. 2,967 ft.

Dickinson County

Franks et al No. 1 Huffman, NW NW SW Sec. 11-13-1. Drlg. 1,960 ft.

Ellis County

Bridgeport No. 1 Froelich, CWL SW Sec. 34-12-16w. Drlg. 2,495 ft.
Darby Pet. No. 1 Peavey, NW NW NE Sec. 24-11-18w. T.D. 3,456 ft.; swb. 110 B.O. in 15 hrs.

Graham County

Continental Oil Co. No. 1 Drumm Comm. Co., SE SE NE Sec. 16-9-21w. Lans. 3,390 ft.; Arb. 3,679-94 ft.; set 6-in. 3,-681 ft.
Continental Oil Co. No. 1 Putnam Inv. Co., CWL SW Sec. 3-9-21w. Drlg. 3,-050 ft.

Greenwood County

Hancock et al No. 1 Rousch, C S½ SE NW Sec. 8-28-13. T.D. 1,530 ft.; S.D.

Harvey County

Lanahan Drlg. Co. No. 1 Lagree. SE SE Sec. 4-23-3w. T.D. 280 ft.; S.D.; (last report).

Kingman County

Duwe & Farris No. 1 Kimminau, NE NW SW Sec. 12-30-9w. Set pkr. 4,450 ft.; 100,000 cu. ft. gas; Simp. 4,635 ft.; drlg. 4,781 ft.

Leavenworth County

John Hardaway No. 1 Scheller, SW SE SW Sec. 30-10-22. Drlg. 337 ft.

McPherson County

Marylyn Oil No. 1 Dixon, NW NE NW Sec. 7-19-2w. T.D. 3,018 ft.; acd.; P.& F. 36 B.O. in 24 hrs.

Marion County

Cox & McGinnis and Saco Oil Co. No. 1 Jolliffe, C S½ SW SE Sec. 2-22-5. H.F.W.; T.D. 2,808 ft.; D.&A.
Johnson et al No. 1-A Miltz, SW SW SW Sec. 24-17-4. T.D. 2,485 ft.; shot and C.O.; H.F.W.
Vickers Pet. No. 1 Sutphin, SW SE SW Sec. 30-22-4. Drlg. 2,030 ft.

Mead County

Pacific Midwest Oil No. 1 Rexford, NE SE SW Sec. 8-30-29w. S.D. 1,435 ft.

Osage County

J. M. Edwards No. 1 Detrick (O.W.D.D.), C NW SE Sec. 21-14-15. O.T.D. 1,200 ft.; S.D. 1,200 ft.

Ottawa County

Babcock Oil No. 1 Copeman, NW NW Sec. 18-10-2w. Miss. 2,835 ft.; H.F.W. 3,302-10 ft.; S.D. for csg. 3,480 ft.

Pratt County

Champlin Ref. Co. No. 1 Elliott, SW NE Sec. 26-27-14w. Fsg. 4,857 ft.

Reno County

Barnsdall Oil Co. No. 1 Krehbiel, NE NE NE Sec. 18-25-5w. Lans. 2,735 ft.; T.D. 3,031 ft.

Rice County

Spurrier & Bruce No. 1 Cary, NE NW NW Sec. 30-18-8w. O.W.D.D.; O.T.D. 1,530 ft.; S.D. 1,680 ft.

Rooks County

Broadview Oil No. 1 Beardsmore, NW SE SW Sec. 2-9-16w. Drlg. 535 ft.
Phillips Pet. Co. No. 1 Tanzey, C NW SW Sec. 25-8-18w. Arb. 3,418-3,423 ft. T.D. 3,424 ft.; acd. and swb. 21 B.F.

Russell County

K. F. Nelson No. 1 Polcyn, SW Sec. 31-13-15w. H.F.W. 3,389-91 ft.; T.D. 3,-393 ft.; P.B. 3,164 ft.; drld. to 3,156 ft.; acd. and recvd. part load; D.&A.
Phil-Han No. 1 Weimeister, SW Sec. 13-14-13w. Top pay 2,655 ft.; perf. and acd. and swb. ⅛ B.O.P.H.; to P.B.
R. H. Shields No. 1-A Gross, CSL SW SE Sec. 5-15-13w. Lans. 2,929 ft.; T.D. 2,-976 ft.; P.B. 2,900 ft.; perf. and rec. S.O.

Saline County

Central States Oil Co. No. 1 Crawford, NW SW NE Sec. 26-13-3w. Drlg. 1,100 ft.

Sedgwick County

Century Pet. Co. No. 1 Wilke, SW SE SW Sec. 1-29-2. Drlg. 650 ft.
Frank Hudson et al No. 1 Fulton, NE SE Sec. 35-28-1e. S.D. 2,356 ft.

Shawnee County

W. M. McKnab No. 1 Fritz, SW SE NW Sec. 4-12-14. Drlg.

Stafford County

Continental Oil No. 1 Russell, SW SW NE Sec. 13-25-13w. Drlg. 3,620 ft.
Stanolind O. & G. Co. No. 1 Curtis, SE cor. Sec. 31-21-12w. Viola 3,544 ft.; Arb. 3,638 ft.; R.U.S.T. 3,640 ft.
Virginia Drlg. Co. No. 1 Schlockter-meyer, SE NW Sec. 7-21-11w. Arb. 3,-347 ft.; rng. 7-in.

Wabaunsee County

Scheu & Tague et al No. 1 Aye, NW SW NW Sec. 10-12-8. S.D. 488 ft.

Woodson County

Roby et al No. 1 Meairs, SW SW NW Sec. 21-25-14. S.D. 400 ft.
M. J. Trott No. 1 Abbott, NW NE NE Sec. 21-25-14e. Drlg. 1,325 ft.

NEBRASKA

Pawnee County

Blazer & McClure et al No. 1 Allen, NW NE SW Sec. 16-1n-10e. Bart. sd. 40 ft.; Miss. L. 149 ft.; Arb. 789 ft.; T.D. 801 ft.; lost hole and shot off csg.; P.B. to 450 ft.; 100 gal. acd. and 1,000 gal. acd.; C.O.

Richardson County

H. C. Stephens and E. Uhri No. 1 Harlow, C SE NE Sec. 32-1n-13e. O.W.D. D.; S.D. 780 ft.

Hitchcock County

C. L. Price No. 1 Carter, SE NE SW Sec. 35-2n-32w. Drlg. 2,300 ft.

Adams County

Prunty Prod. Co. No. 1 Katzburg, 2 mi. S of Hastings; 4,000-ft. test. Spd.

OKLAHOMA

Week Ending February 11

NORTHERN OKLAHOMA

Caddo County

Texas Co. No. 1 Smith, C NE NW Sec. 2-5-12w. T.D. 2,556 ft.; S.D.O.

Cleveland County

Burke-Greis No. 1 Alberts, SE SW NW Sec. 19-7-1w. Hunton 6,885 ft.; Viola 7,320 ft.; Dense 7,390 ft.; 2nd Wlx. 7,-710-35 ft., T.D.; ran Schlm.; S.D.O.
English Drlg. Co. No. 1 Rice, C NE NE Sec. 3-10-2w. Drlg. 960 ft.
Harper, Turner et al No. 1 Taylor, SE NE NW Sec. 23-8-2w. Woodford 7,090 ft.; drlg. 7,158 ft.
Nels-Burrton No. 1 Hirsch, NW NW NE Sec. 17-9-2w. O.W.P.B.; O.T.D. 7,692 ft.; T.D. 7,695 ft.; perf. 7,525-40 ft. in sd.; swbg. F., mostly wtr.

Comanche County

Ker-Lyn Oil Co. No. 1 Laging, C NE SW Sec. 30-4-9w. Drlg. 603 ft.
Ed Parsons No. 1 Stephens, C NW SW Sec. 29-4-9w. Drlg. 61 ft.

Garfield County

Champlin Ref. Co. No. 1 Allen, SE SE SE Sec. 26-24-8w. W.O.C. 6,385 ft.
Hughes Drlg. Co. No. 1 Meisner, C NE NW Sec. 10-20-4w. Viola 5,705 ft.; T.D. 5,755 ft.; R.U.S.T.

Garvin County

H. R. Hollenbach et al No. 1 Butterly, NE NE SE Sec. 22-1n-1e. 3,218,000 ft. gas; drlg. 3,205 ft.; S.D.; repairs.
Ker-Lyn Oil Co. No. 1 Butterly, NE NE SE Sec. 22-1-1. O.W.D.D.; O.T.D. 3,-205 ft.; to D.D.

Grady County

Carter Oil Co. et al No. 1 Smith C-58, C SE SW Sec. 26-5-8w. S.S.O. 5,329-58 ft.; S.O. 5,433 ft.; cd. 5,964-76 ft.; rec. sh.; cd. 6,351-76 ft.; rec. hd. sd.; T.D. 6,613 ft.; set 9-in. csg. 6,602 ft.; W. O.C.

Hughes County

Homer Doup et al No. 1 Bond, NE NE SW Sec. 7-7-9. S.D. 3,098 ft.; D.&A.
Skelton et al No. 1 Gilmore, C N½ NE SE Sec. 7-5-9. Drlg. 167 ft.

Kay County

Cooper Drlg. Co. No. 1 Caughlin, SE NE SW Sec. 30-25-1. Drlg. 135 ft.
Crawford No. 1 Boehl, SE SE NW Sec. 34-27-2w. T.D. 1,040 ft.; fsg.
C. C. Nye No. 1 Wolfenbarger, SW NW SW Sec. 16-27-4. T.D. 3,201 ft., sd.
Kaw Oil Co. No. 1 Wolfenbarger, NW NW SE Sec. 9-27-4. T.D. 60 ft.; S.D.; rprs.

Kingfisher County

Ace Gutowsky No. 1 Lankford, NE NE SE Sec. 34-17-6w. Drlg. 5,775 ft.

Kiowa County

C. J. Hagerling No. 1 Kimray, SW SW NW Sec. 36-5-18w. Drlg. 500 ft.
R. L. Emerson No. 1 Handcock, SE SE NE Sec. 26-6-15w. S.D. 520 ft.; mch. moved out.

Lincoln County

Fields & Nagle No. 1 Black, SE SE SE Sec. 31-16-6; O.W.D.D. T.D. 3,980 ft.; P. 10 B.O. and wtr. in 3 hrs.; tstg.

Muskogee County

Heydrick No. 1 Paschall, NE SE NW Sec. 22-13-19. S.D. 1,446 ft.

Okfuskee County

Carter & Hight No. 1 Rogers, SW SW SW Sec. 6-13-8. T.D. 2,850 ft.; P.B. 2,-510 ft.
I. T. I. O. No. 1 Palmer, NE SE NW Sec. 5-10-9. Drlg. 1,141 ft.

Okmulgee County

Jim Wise Drlg. Co. No. 1 Morrow, SW NW NE Sec. 16-15-13. 3,000,000 cu. ft. gas 1,930-38 ft.; decreased to 1,000,000 cu. ft. at 1,985 ft.; T.D. 1,985 ft.; S.D.

Pawnee County

Ed Kelly No. 1 Hill, SW SW SE Sec. 1-21-5. T.D. 1,780 ft.; S.D.

Payne County

Comail Oil Co. No. 1 Curran, SE SE SE Sec. 21-19-6. Drlg. 3,063 ft.
Starr O. & G. Co. No. 1 Georgia, SE SW NE Sec. 35-18-4. 1st Wlx. 4,051 ft.; 2d 4,083 ft.; T.D. 4,123 ft.; Skinner sd. 3,463-93 ft.; P.B. 3,494 ft.; est. 2,000,-000 cu. ft. gas; tstg.

Pittsburg County

Phillips Pet. Co. No. 1 Hubacker, C NW NE Sec. 11-7-5. Drlg. 3,597 ft.

Pontotoc County

H. Z. Moore No. 1 Payne, SE NW SE Sec. 16-4-4. T.D. 997 ft.; S.S.O.; S.D
Union Dev. Co. No. 1-A Abbott, SW NW NE Sec. 34-3-6. S.D. 4,100 ft.

Pottawatomie County

Grimes et al No. 1 Dye, NW NW SE Sec. 2-5-5. Drlg. 1,810 ft.
Wood Oil Co. No. 1 Peters, SW SE NW

Sec. 28-8-4. Wlx, 3,540 ft.; dolo. 4,365 ft.; perf. 4,560 ft.; perf.; S.&F. 125 B. O. in 24 hrs.; perf.&S. 130 B.O. in 24 hrs.; treated twice and tstg.

Seminole County

Atlantic Ref. Co. No. 1 **Atkinson**, NW NW SW Sec. 17-6-6. Misener 3,697 ft.; Viola 3,718 ft.; T.D. 4,023 ft.; P.B. 3,819 ft.; W.O.C.

Lesslie Rogers No. 1 **Kidd**, NE SW SE Sec. 33-10-8. T.D. 200 ft.; abd.

H. S. Moss No. 1 Leachman, C N½ SE NE Sec. 34-10-6. Drlg. 3,820 ft.

W. C. Wood No. 1 **Aldridge**, SW NW NE Sec. 5-8-8. T.D. 1,910 ft.; H.F.W.; S. D.O.

Sequoyah County

Thompson Brs. No. 1 Ruby, NW NW NE Sec. 30-12-22. Drlg. 510 ft.

Stephens County

Phillips Pet. Co. No. 1 **Culbertson**, NW NW SE Sec. 4-1-5w. T.D. 4,346 ft.; Schlm. shows O.&G. 3,989-4,011 ft.; to run csg. and test.

Texas County

Republic Nat. Gas Co. No. 1 **Dulabohn**, C Sec. 21-6n-15ecm. Drlg. 2,365 ft.

Republic Nat. Gas Co. No. 1 **Judd, CSL** SW Sec. 24-6n-15ecm. T.D. 2,870 ft.; gas 7,100,000 ft.

Washita County

Continental Oil Co. No. 1 Proctor C NW Sec. 28-10-20w. T.D. 10,195 ft.; rmg. 9,668 ft.

L. B. McWhirter No. 1 fee, NW SW SW Sec. 34-8-19w. T.D. 2,190 ft.; S.D.

SOUTHERN OKLAHOMA

Carter County

Pure Oil Co. No. 1 **Noble**, NE SE Sec. 35-3s-1e. Woodford 4,289 ft.; Hunton 4,638 ft.; drlg. 4,993 ft.

Choctaw County

Clyde Ross et al No. 1 Hardy, SE SE NW Sec. 21-7s-15. Drlg. sd. 1,406 ft.

Jefferson County

H. W. Weir No. 1 Carmichael, NE NE SW Sec. 23-7s-7w. W.O.C. 102 ft.

Marshall County

Hughes et al No. 1 Vittitto, C NE SE Sec. 11-5s-4e. O.W.D.D.; O.T.D. 7,100 ft.; S.D. for fuel.

Murray County

A. G. Carter No. 1 Vensonite, 1,170 ft. W and 150 ft. S, Sec. 34-1s-2e. Drlg. 400 ft.

Tillman County

Smith No. 2 Hammel, NE NW NW Sec. 6-5s-15w. T.D. 2,380 ft.; recvd. D.P. and S.D.

NORTH MISSISSIPPI

Calhoun County

L. C. Lucas No. 1 E. C. Boland, 400 ft. E and 500 ft. S, NW cor. SW Sec. 9-22n-9e. S.D. 791 ft.

Clarke County

Jeremiah L. Ryan et al No. 1 M. Eddins, 500 ft. SE cor. Sec. 29-2n-14e. S.D. 290 ft.; changing ownership; will resume drlg.

Hinds County

G. Jefferys No. 1 Gaddis Farms, Inc., NW cor. SE Sec. 26-7n-4w. S.D. 3,448 ft.

Cleve Love et al No. 1 S. F. Johnson, NE cor. Sec. 29-6n-1w. S.D. 5,218 ft., sd.; arng. D.D.

Montgomery County

Dr. T. H. Chichester No. 1 Mitchell, Sec. 36-20n-7e. Drk.

Pontotoc County

Waldrop et al No. 1 Bray, Sec. 17-11s-1e. S.D. 310 ft.

Simpson County

Cleve Love No. 1 N. E. Garner, SW cor. SW NE Sec. 1-10n-17w. S.D. 900 ft.

Goodwill O. & G. Co. No. 1 Berry, Sec. 33-2n-4e. S.D. 2,810 ft.

Yalobusha County

Chas. W. Crader et al No. 1 John Bruce James, 990 ft. NE cor. Sec. 24-11s-6w. Top chk. 1,565 ft.; T.D. 3,195 ft.; abd.

FLORIDA

Levy County

Florida Oil Discovery No. 2 Cedar Key Co., Sec. 9-18s-13e. S.D.; W.O.; T.D. 4,092 ft.

Nassau County

St. Mary Oil Corp. No. 1 Hillard, Sec. 19-4n-24e. Set 6⅝-in. csg. 3,935 ft.; fsg. D.S. 4,575 ft.

Lake County

Union O. & R. Co. No. 1 Gulf Expln., Sec. 17-24s-25e. S.D. 235 ft.

Suwanne County

J. W. Phillips Oil Explin. Co. No. 1 Shilkett, Sec. 14-4s-14e. Drlg. 150 ft.

ALABAMA

Barbour County

H. A. Stebbinger et al No. 1 Mrs. Alyce Robertson, C NE NE Sec. 19-10n-25e. T.D. 4,310 ft.; rmg. 4,100 ft.

ARKANSAS

Calhoun County

J. R. Lockhart No. 1 Southern Craft Corp., SE cor. NW NW Sec. 17-14-13. Top Nac. 2,372 ft.; top Tokio 2,920 ft.; S.D. 3,291 ft.; arng. resume drlg.

Columbia County

Atlantic Ref. Co. No. 1 A. S. Crisp, NW cor. NW NE Sec. 23-17-20. Set 10¾-in. csg. 3,185 ft.; W.O.C.

Atlantic Ref. Co. No. 1-B Garrett, C NW NW Sec. 24-17-20. M.I. rig.

W. L. Goldston No. 1 A. C. Garrett, C SE SW Sec. 13-17-20. Set 16-in. 134 ft.; 10¾-in. csg. 2,227 ft.; cd. por. L. gas odor 7,374-94 ft.; T. Rey. L. 7,372 ft.; T. sat. 7,463 ft.; cg. ahd. 7,497 ft.

Pet. Finance Co. No. 1 Garrett, C SW SW Sec. 13-17-20. M.I. rig.

Alice Sydney Oil Co. No. 1 Crisp, Sec. 23-17-20. 16-in. csg. 127 ft.; drlg. rd.& gr. sh. 4,328 ft.

Southwood Oil Co., Inc., No. 1 J. O. Hutcheson, C NE SW Sec. 14-17-20. Por. oolitic L. 7,500-53 ft.; T. Rey. L. 7,497 ft.; T. sat. L. 7,502 ft.; rmg. down and will drill ahd.

Southwood Oil Co., Inc., No. 2 J. O. Hutcheson, C SE SW Sec. 14-17-20. 16-in. csg. 135 ft.; drlg. 2,810 ft.

Standard Oil Co. of La. No. 3 Crone, SW cor. NE SW Sec. 8-16-22. T. L. 7,238 ft.; por. L. 7,240-56 ft.; set 6-in. csg. 7,241 ft.; T.D. 7,267 ft.; W.O.C.

Standard Oil Co. of La. No. 1 Lewis Unit, SE cor. NW NE Sec. 15-17-19. Set whipstk. and drlg. sd.&sh. 6,615 ft.

Craighead County

Tannark, Inc., No. 1 Ruby M. Martin, 580 ft. NL, 80 ft. EL, Sec. 35-14n-3e. Fsg. for bit 1,735 ft.

Hot Spring County

John H. James No. 1 **Sturgess Lbr. Co.**, SW cor. SW SE Sec. 24-6-18. 10-in. csg. 58 ft.; cd. hd. dense gr. L. 964-78 ft.; drlg. hd. L., strks. sh. 1,019 ft.

Lafayette County

Shell Pet. Corp. and Ohio Oil Co. No. 1 Warren, C SE SE Sec. 13-16-24. 13⅜-in. 194 ft.; 9⅝-in. 2,272 ft.; T. Bknr. 6,920 ft.; D.S.T. 7,169-7,228 ft.; shwd. S.W. and oil; tstg.; set 7-in. csg. 7,169 ft.; T. L. 7,165 ft.; T. por. L. 7,173 ft.; wtr. contact 7,186 ft.; T.D. 7,225 ft.; D.S.T. 7,155-7,220 ft.; tstd. mud; no S. O., G. or wtr.; swbd. S.W. with rainbow oil; 150 ft. F.I.H., 95% wtr.; cd. 7,220-7,318 ft.; soft ool. L. cores below 7,288 ft. showed salty taste; tight por. ool. L. 7,337 ft.; P.B. 7,284 ft.; arng. acd.; cd. 7,337-7,420 ft., hd. tight ool. L.; no show.

Wadley-Erwin et al No. 1 G. W. Taylor, C NE SW Sec. 15-19-26. 13⅜-in. csg. 447 ft.; T. anhy. (cor.) 5,312 ft.; T. Hill 5,855 ft.; T. Gloyd 5,992 ft.; por. Gl. 6,071-76 ft. (S.W.); Dees sd. 6,114-17 ft. (tight); T. Young 6,154 ft.; T.D. 6,320 ft.; W.O.

Little River County

Barbee et al No. 1 **Ada Mills**, SE cor. SW NW Sec. 18-12-29. R.U.

C. & M. Drlg. Co. No. 1 **Strawn**, SW cor. SE Sec. 20-10-32. Cd. 1,270-80 ft.; sh.& wtr. sd.; S.D.; W.O.

Harford Oil Corp. No. 1 **Pinning**, C NE NE SW Sec. 6-13-30. S.D.; W.O. 1,925 ft.

Joe G. Strahan et al No. 2 **Dierks Lbr. Co.**, Sec. 21-12-28. S.D. 3,661 ft.

Lonoke County

Carlisle Oil Dev. Co. No. 1 Walthour-Flake, NW cor. Sec. 10-1n-7w. Drlg. sdy. sh. 1,350 ft.

Lonoke-Prairie Dev. Co. No. 1 T. Young, C NW NW Sec. 8-3n-7w. Hole clean; U.R. 8¼-in. csg. 236 ft.; T.D. 300 ft., sd.; S.D.

W. L. Tedford No. 1 Anderson, 8-in. 400 ft.; arng. run 5-in. csg. on pkr. to S.O. wtr. flw.; drlg. wtr. sd. 952 ft.

Miller County—Rodessa

Gerhig Co. No. 4 Mitchell, SE SW Sec. 2-20-28. Drlg. L.&sh. 3,500 ft.

Gerhig Co. No. 2 Watson, NE cor. N SE Sec. 2-20-28. Drlg. L.&sh. 4,350 ft.

Gulf Ref. Co. No. 5 Johnson, SW cor. Sec. 29-15-15. R.U.

Lyons & Merritt No. 1 Matlock, SE cor. Sec. 2-20-28. Drlg. 4,700 ft.

Normandie Oil Co. No. 2 Watson, NE SE Sec. 2-20-28. Drlg. sh. 2,000 ft.

Mrs. S. O. Thompson No. 1 Gen. Am. Life Ins. Co., SE cor. SE SW Sec. 20-14-26. Cd. 3,657 ft.; slightly por. sdy. L.; D.S. stk.; T.D. 3,825 ft.; D.S.T. 3,677-95 ft.; tstd. 15 thribbles S.W.; 8 min.; S.D.; W.O.; 3,851 ft.

Mississippi County

Benedum & Trees Oil Co. No. 1 Mack, 330 ft. SW cor. NW SW Sec. 2-15n-12e. Top Nac. 2,160 ft.; set 7-in. csg. 2,897 ft.; drlg. very hd. gr. L. 4,072 ft.

Nevada County

Benedum & Trees Oil Co. No. 1 T. Erby, SW cor. SW SW Sec. 3-14-20. 10-in. csg. 100 ft.; cd. sd. 2,120-21 ft.; 7-in. csg. 2,120 ft.; T.D. 2,121 ft.; W.O. pmp.

Webb & Franks No. 1 P. T. Grayson, SW cor. NW SE Sec. 4-14-20. Tokio sd.; D.S.T. 2,098-2,102 ft.; 10 min.; rec. 200 ft. oil and mud; open ck.; set 7-in. csg. 2,099 ft.; T.D. 2,102 ft.; W.O.C.

Texas Canadian Oil Co. No. 3 Stocks, C SW NE Sec. 9-15-22. 10-in. csg. 20 ft.; 7-in. csg. 1,341 ft.; T. Nac. 1,185 ft.; ripped csg. 1,190-96 ft.; bld. S.S.O.; W. O.S.R.; T.D. 1,204 ft.

Ouachita County

Deep Rock Oil Corp. No. 1 C. Wesson, SE cor. NE Sec. 23-15-19. Set 13-in. csg. 350 ft.; cd. T. C. V. 4,305 ft.; T. Buckner 5,700 ft.; T. Smkvr. 5,923 ft.; por. L. 5,934 ft.; drld. 6,003-54 ft.; set 5½-in. csg. 6,038 ft.; T.D. 6,054 ft.; W. O.C.

Union County—Schuler

E. M. Jones No. 1 J. C. Morgan, SE NW Sec. 13-18-18. Set 16-in. 144 ft. and 10¾-in. csg. 2,154 ft.; T. Jones sd. 7,573 ft.; cd. to 7,592 ft.; T.D. 7,650 ft.; 7-in. csg. 7,639 ft.; W.O.C.

E. M. Jones No. 2 J. C. Morgan, SE cor. NE NW Sec. 13-18-18. Drlg. sdy. sh. 7,271 ft.

Lion Oil Ref. Co. No. 2 Henry, C N SE SE Sec. 12-18-18. R.U.&S.D.

Phillips Pet. Co. No. 1 Amanda, SE cor. NE SE Sec. 12-18-18. T. Jones sd. 7,548 ft.; T.D. 7,720 ft.; 7-in. csg. 7,697 ft.; comp.; 299 B.P.D.; 24/64-in. ck.; T.P. 900 lbs.; C.P. 450 lbs.; perf. 7,580-92 ft. and 7,598-7,608 ft.

Roberts & Murphy No. 3 Leona, NW cor. Lot 6, SW Sec. 7-18-17. Drlg. rd. sdy. sh. 6,603 ft.

Union County—Other

Ark. Southern Oil Corp. No. 3-A Simmons, NW cor. NE NW Sec. 15-18-13. O.W.D.D. Graves sd. 2,612-29 ft.; tstd. gas; P.B. to Nacatoch sd.; S.D. 2,629 ft.; W.O.

J. R. Lockhart No. 1-A Raulston, NE cor. SW SE Sec. 12-17-14. 7-in. csg. 3,037 ft.; tstd. S.W.; comp.; no ga.

J. R. Lockhart No. 3 Raulston, SE cor. NE SE Sec. 12-17-14. 10-in. csg. 105 ft.; W.O.C.

Mullins & Brooks et al No. 1 Nash, 500 ft. N and 338 ft. W of SE cor. NW SE Sec. 7-17-13. 10-in. csg. 148 ft.; D.S.T. 3,037-52 ft.; rec. 250 ft. oil and 30 ft. S.W.; 14-min.; W.P. 4 lbs.; top pay 3,232 ft.; 5½-in. 3,100 ft.; drld. out to 3,089 ft.; perf. 3,022-44 ft.; tstd. S.S.O.&G. and S.W.; reperf. 3,020-44 ft.; swbd. 100 B.P.D. for 3 days; W.O. S.R. 3,232 ft.

Mullins, Brooks et al No. 2 Nash, NE cor. NE SW Sec. 7-17-13. 10-in. 148 ft.

Sklar Oil Corp. No. 10 Murphy, SW NE Sec. 9-16-15. Set 10-in. csg. 77 ft.; W. O.C. 80 ft.

Sloan Wells, Tr., No. 4 G. J. Childs, 150 ft. NW cor. NE SW Sec. 8-16-16. O.W. W.O.; O.T.D. 2,656 ft.; S.D.; W.O.

LOUISIANA

N. LOUISIANA WILDCATS

Bienville Parish

Ark. La. Gas Co. No. 2 Gayoso, 660 ft. SW cor. SE Sec. 14-16-10. T. Tr. Pk. 5,432 ft.; D.S.T. 5,796-5,805 ft.; tstd. dry in 26 min.; drlg. sh.&sd. 6,212 ft.

Bossier Parish

Premier Inv. Co. No. 1 McDade, SE SW NE Sec. 28-19-11. T.D. 2,384 ft.; acd. with 1,000 gal.; csg. seat gave away; hole full S.W.; 5½-inch csg., 2,342 ft. pmpg. 5 B.O.P.D. and 25 bbls. S.W.; T.D. 2,463 ft.; S.D.; high wtr.

Caddo Parish

P. T. Alexander No. 1 fee, NE cor. SE Sec. 1-20-16. Set 6-in. csg. 1,340 ft.

R. E. Allison No. 3 Ellerbe, NE cor. Sec. 28-18-14. Loc.

Claude Bagley No. 1 Crystal fee, NE SW Sec. 24-21-16. Set 6-in. csg. 996 ft.; T.D. 1,003 ft.; tstd. S.W.; S.D.; W.O.

R. L. Bauman No. 1 Dorian, SE cor. NE Sec. 34-18-14. Drlg. sh.&L. 3,635 ft.

J. M. Buckler No. 2 Stiles, NE cor. Sec. 17-21-16. Drlg. 105 ft.

Burnham Drlg. Co. No. 1 Gray, 330 ft. S and E, C Sec. 34-22-16. 12½-in. csg. 100 ft.; T. oil sd. 2,459 ft.; cg. 2,463 ft.

Carney et al No. 3 Hart, SE NW Sec. 21-21-16. Set 8-in. csg. 1,563 ft.; tstd. S.O.; will acd. 1,839 ft.

Paul Cooper No. 2 Stiles, SW SE Sec. 28-21-16. Set 6-in. csg. 1,542 ft.; used 1,500 gal. acd. and tstd. dry; tstd. S.O. 1,851 ft.; drlg. to 1,877 ft.; tstd. S.W.; W.O.

Cryer & Davis No. 1 Crystal fee, S and W, C Sec. 25-21-16. 10-in. csg. 70 ft.; S.D. 250 ft.

L. L. Davidson No. 4 Muslow, NE SE Sec. 26-21-16. T.D. 2,257 ft.; comp.; 25 B.P.D.; pmpg.

Driscoll Drlg. Co. No. 1 Muslow, NE cor. Sec. 9-20-15. Rng. csg. 1,310 ft.

Claude Ferguson No. 4 Lawhon, NE cor. Sec. 7-20-15. 10-in. csg. 108 ft.; 7-in. csg. 1,348 ft.; acdzd. with 4,000 gal.; T.D. 1,589 ft.; comp.; 35 B.P.D.

Claude Ferguson No. 5 Lawhon, NW cor. Sec. 7-24-15. R.U.

H. C. Prod. Co. No. 1 Kinnebrew & Ratcliff, NE cor. Sec. 5-19-16. D.S.T. 2,253 ft.; S.W.; 7-in. csg. 1,497 ft.; P.B. 1,680 ft.; O.T.D. 2,253 ft.; tstg.

Harry Hanbury No. 1 Sample, C SW SE Sec. 23-18-14. Drlg. sh. 5,012 ft.

Hurricane Pet. Corp. No. 1-C Chandler, C SW SE Sec. 34-18-14. Jnkd. at 1,256 ft.; skd. over and began second hole; drlg. 50 ft.

Hurricane Pet. Corp. No. 1 North, NW cor. SE NE Sec. 34-18-14. Set 9⅝-in. 1,637 ft.; sat. L. 5,528-44 ft.; set 5½-in. csg. 5,585 ft.; perf. 5,537-40 ft.; comp.; 141 B.P.D.; 20/64-in. ck.; T.P. 800 lbs.; C.P. 1,375 lbs.; T.D. 5,591 ft.

R. O. Knitveton No. 1 Kahn, NW cor. Sec. 35-18-14. Set 5½-in. csg. 5,547 ft.; sat. L. 5,544-64 ft.; T.D. 5,563 ft.; comp. 33 B.P.H.; ¾-in. ck.; T.&C.P. 500 lbs.

La. Oil Prod. Co. No. 15-B Muslow, Sec. 4-20-15. Set 7-in. csg. with 4½-ft. perf. on bttm. at 2,148 ft.; W.O.S.R.

Wm. C. Leisk No. 1 Sinclair, NW SE Sec. 26-18-14. 13⅜-in. csg. 294 ft.; 9⅝-in. csg. 1,412 ft.

Ben Levy No. 1 Crystal fee, SW cor. Sec. 25-21-16. Set 6-in. 1,350 ft.; tstd. dry 1,650 ft.; W.O.

C. D. Loe No. 1 Meyer, SE cor. Sec. 33-18-14. T. Pettit 5,592 ft.; O.T.D. 5,631 ft.; swbd. O.&S.W.; resqzd. all perf. and set plug 5,605 ft.; arng. tst.

Magnolia Pet. Co. No. 5 Caddo Lve. Bd., NE cor. Sec. 7-20-15. T.D. 1,562 ft.; acdzd. with 3,000 gal. and tstg.

Magnolia Pet. Co. No. 6 Caddo Lv. Bd., NW cor. Sec. 7-20-15. Drlg. sh. 230 ft.

L. H. Mahon No. 1 Henderson, SW cor. Sec. 27-22-16. D.S.T. 2,465-80 ft.; flwd. oil in 5 min.; set 5½-in. csg. 2,473 ft.; comp.; 153 B.P.H.; ¾-in. csg. ck.; making 45.1-grav. oil; T. sd. 2,473 ft.; T.D. 2,481 ft.

Manziel et al No. 3 Ramsey, NE SE Sec. 32-21-15. Set 5½-in. csg. 1,348 ft.; acd. with 2,000 gal. at 1,590 ft.; W.O.S.R.

Oblinger & Ritter No. 1 Boisseau, SE cor. Sec. 34-21-16. R.U.

Sam Ripps No. 1 Chew-Lvy. Bd., Sec. 23-21-16. 8-in. csg. 1,025 ft.; tstd. S.W.; abd. 1,037 ft.

Southern Star Pet. Corp. No. 1 Muslow, SE NW Sec. 17-20-15. Pmpd. S.W.; O.T.D. 1,698 ft.; S.D. 2,150 ft.

J. O. Whittington No. 1 Grayson, C SE SE Sec. 30-19-15. Set 9⅝-in. csg. 2,200 ft.; T. anhy. 4,138 ft.; drlg. sh.& L. 4,200 ft.

R. W. Williams No. 3 Ark. Fuel, SW cor. NW SW Sec. 25-21-16. R.U.

Caldwell Parish

G. W. Ziegen et al No. 15 Cent. La. Lbr. Co., 1,650 ft. S, 330 ft. E, NW cor. Sec. 32-15-2e. S.D. 1,653 ft.

Claiborne Parish

E. T. Oakes et al No. 2 Kilgore, C NW SE Sec. 28-21-5. Hd. to slightly por. L. 5,294-5,303 ft.; 5½-in. csg. 5,287 ft.; used 6,000 gal. acd.; swbg. to test; tstd. S.S.O. 5,324 ft.; split csg. 2,600 ft.; cmtd. csg.; swbd. dry; set tbg. with pkr.; cannot cmt. off S.W.; T.D. 5,234 ft.; set 4½-in. csg. 5,290 ft.; tstd. dry; S.O. 5,324 ft.; used 5,000 gal. acd.; reacidized 2,000 gal. acd.; testg.; S.S.O. 5,324 ft.

De Soto Parish

S. S. Alexander No. 1-A Stoll, Sec. 5-12-16. Set 7-in. csg. 2,705 ft.; acd. with 3,000 gal. and tstd. est. 2,000,000 ft. gas; 400 lbs.; D.S.T. 2,984-3,046 ft.; tstg. 165 ft. mud cut with oil, 35 min.; set short string 5-in. csg. on bttm.; T.D. 3,145 ft.; perf. 3,000-44 ft. and tstg.

Paul Miller No. 2 Jal Drlg. Co., NE Sec. 5-11-11. Set 7-in. csg. 4,038 ft.; perf. 3,901-14 ft.; C.I.; W.O. ga.; R.P. 1,400 lbs.; O.T.D. 4,205 ft.; perf. csg. 3,901-14 ft.; C.I.; W.O. ga.; R.P. 1,400 lbs.

La Salle Parish

Alfred Black, Tr., No. 1 Wright, Sec. 35-10-1e. R.U.

Stovall Drlg. Co. No. 4-B Russell, NW cor. Sec. 25-10-1e. Drlg. sh. 684 ft.

G. C. Walsenham No. 1 Dean, NW cor. SE Sec. 23-9-1e. 6-in. csg. 1,595 ft.; tstd. S.W.; S.O.; sd. 1,602-05 ft.; T.D. 1,654 ft.; W.O.

Natchitoches Parish

Jack Lent et al No. 1 Whatley, SW cor. Sec. 17-10-10. S.O.&G. reported at 1,490-1,516 ft.; T.D. 1,516 ft.; D.S.T. 1,470-56 ft.; tstd. dry in 20 min.; did not set csg.; D.S.T. 2,069-96 ft.; rec. 180 ft. mud and sl.; S.O. and 900 ft. S.W. in 15 min.; drlg. sh. 2,670 ft.

Red River Parish

Crow Drlg. Co. No. 1 Crichton, 990 ft. S and E, C Sec. 17-13-10. Set 4½-in. csg. 2,540 ft.; T.D. 2,562 ft.; perf. 2,505-39 ft.; W.O.S.R.

J. C. Prine No. 3 Haynes, SW cor. Sec. 20-13-10. 5¾-in. csg. 2,510 ft.; D.D. 2,560 ft.; W.O.S.R.

H. B. Schumacher No. 1 Crichton, SW

cor. NW Sec. 18-13-10. Set 8-in. csg. 1,065 ft.; W.O.C. 1,365 ft.

D. J. Simmons et al No. 1 Richardson, NE cor. Sec. 24-13-11. S.D. 1,720 ft.; rep. rig.

Sabine Parish

Clyde Creighton No. 1 Bowman Hicks, C NE NW Sec. 3-7-12. 10-in. csg. 60 ft 7-in. csg. 2,422 ft.; comp.; pmpg. est. 200 B.P.D.; T.D. 2,618 ft.

Earl F. Fox No. 1 Cook Ld. Co., SW cor. SE NW Sec. 1-9-12; O.W.W.O O.T.D. 3,655 ft.; arng. dpn. 3,655 ft.

A. B. House No. 1 Sabine, NW NW Sec. 23-7-14. 8-in. csg. 2,134 ft.; used 7,000 gal. acd.; tstd. dry; cond. mud 3,642 ft.; arng. set 7-in. 3,500 ft.; T.D. 3,642 ft.

Hunter Co. No. 8 Bowman Hicks, C NE NW Sec. 13-7-13. Set 6-in. csg. 2,126 ft.; T.D. 2,548 ft.; tstd. dry; arng. dpn.

LeGrande & Brown No. 1 Tatum, NE cor. NW NE Sec. 17-8-13. Tstd. dry 2,130 ft.; tstd. S.G.; acd. with 1,000 gal., tstd. dry 2,340 ft.; did not acd.; tstd. S.W.; S.O. 2,340 ft.; 500 ft. O.I.H.; used 3,000 gal. acd.; tstd. S.O. 2,340 ft.; will set short string 4-in. csg. 2,340 ft.; W.O.S.R.; 800 ft. O.I.H.

H. L. Nutting No. 1 Williams, SW cor. Sec. 13-7-11. T.D. 3,130 ft.; used 3,000 gal. acd.; swbg. S.W. 2,860 ft.; will P. B. 2,755 ft.; tstd. S.W.; P.B. 2,730 ft.; acds.; tstd. S.W.; S.O. 2,730 ft.; S.D.; T.D. 2,730 ft.

Major Oil Co. No. 1 Long Bell, SW cor. SW SE Sec. 1-7-13. 7-in. csg. 2,142 ft.; T.D. 2,576 ft.; tstg. small S.O.

W. L. Posey et al No. 3 Hale, NW cor. NW Sec. 12-7-13. 7-in. 2,090 ft.; tstg. 2,515 ft.

C. H. Smith No. 1 Sabine Lbr. Co., NE cor. NW NW Sec. 9-7-13. Set 10-in csg. 66 ft.

Sutton Zwolle Oil Co. No. 2 Sabine, NW cor. NE NW Sec. 23-7-14. T. chk. 2,128 ft.; drlg. chk. rk. 2,470 ft.

Voline Oil Co. No. 1 Sabine, NE cor. NW NW Sec. 23-7-14. Reported S.O. in sdy. L. 3,760-3,805 ft.; set 6⅝-in. csg. 3,760 ft.; T.D. 3,805 ft.

Tensas Parish

H. V. Schumacker No. 4 Mound Plantation, Sec. 29-11-12e. Drlg. sd.&sh. 2,940 ft.

Webster Parish

R. L. Fisher et al No. 1 S. P. D. Coyle, 660 ft. N and 1,880 ft. E of SW cor. Sec. 23-21-10. Holly. sd. 5,544-59 ft. and 5,809-16 ft.; set 5½-in. csg. 5,782 ft.; T.D. 5,998 ft.; tstd. S.G.; swbd. S.O.& G.; flwg. 10 B.P.D. by hds. with input gas; tstg.

Hunt Oil Co. No. 4 Bodcaw-Stewart, 2,155 ft. N and 660 ft. E, SW cor. Sec. 34-21-10. Holly. sd. 5,821-47 ft.; set 9⅝-in. csg. 5,802 ft.; tstd. S.O.&G. in Hollwy. sd.; drlg. sh. 7,235 ft.

Hunt Oil Co. No. 5 Bodcaw-Stewart, NW cor. NE Sec. 33-21-10. Drlg. sh.&L. 5,235 ft.

Hunt Oil Co. and Stanolind O. & G. Co. No. 1 Coffee-Webster Inv. Co. Unit, C NE NW Sec. 36-31-10. 13⅜-in. csg. 677 ft.; no Holly. sd.; set 9⅝-in. csg. 5,780 ft.; T.D. 7,636 ft.; S.D.; high wtr.

Hunt Oil Co. No. 5 Webb, 75 ft. W. C SE NE Sec. 14-21-16. Hollwy. sd. (oil) 5,740-63 ft.; drlg. sh. 5,897 ft.

Magnolia Pet. Co. No. 4 Branton, NE cor. Sec. 6-22-9. 9⅝-in. csg. 5,933 ft.; T. lower Marine 7,750 ft.; T. Bodcaw sd. 8,193 ft.; T. Davis 8,442 ft.; show some heavy oil at 8,450 ft.; set 7-in. csg. 9,137 ft.; cg. sdy. sh. 9,141 ft.

Magnolia Pet. Co. No. 1 Cox. C NW SW Sec. 15-21-10. Set 13⅜-in. csg. 847 ft.; 9⅝-in. csg. 5,868 ft.; drlg. sh.&L. 6,065 ft.

Magnolia Pet. Co. and Ohio Oil Co. No. 1 Coyle-Hodges Unit, SW cor. NW Sec. 21-21-10. Drlg. sh.&L. 5,291 ft.

Magnolia Pet. Co. No. 1 Roseberry Unit, 20 ft. N and W, C SE Sec. 29-23-9. Set 13⅜-in. csg. 887 ft.; T. Pettit L. 5,725 ft.; S.O. 5,764-66 ft.; T. Tr. Pk. 5,900 ft.; set 9⅝-in. csg. 5,962 ft.; drlg. sh.&L. 7,754 ft.

Ohio Oil Co. No. 5 Bodcaw Acct. 4, NW SE Sec. 13-21-10. O.W.W.O.; killed to recomp.; S.D. 7,774 ft.

Ohio Oil Co. No. 1 Merritt, NE cor. Sec. 14-21-10. Set 13⅜-in. csg. 806 ft.; drlg. sh.&L. 3,620 ft.

Oliphant Oil Corp. No. 1-A Hodges, C NW NE Sec. 3-20-10. Top Tr. Pk. 5,995 ft.; no Holl. sd.; set 9⅝-in. csg. 5,610 ft.; drlg. sh. 8,006 ft.

Stanolind O. & G. Co. and W. Delaney No. 1 Pardee-Coffee Unit, C NE Sec. 36-21-10. T. Tr. Pk. 5,932 ft.; no Holloway sd.; set 9⅝-in. csg. 5,955 ft.; drlg. sh.&sd. 7,983 ft.

Union Prod. Co. No. 1 Walker Unit, 50 ft. S, C SE Sec. 30-18-8. Set 9⅝-in. csg. 6,490 ft.; T. Pettit 6,665 ft.; T. Tr. Pk. 6,910 ft.; drlg. sh.&L. 7,168 ft.

Woodley Pet. Co. No. 1 J. O. Couch, C NW SW Sec. 36-21-10. T. "D" sd. 8,450 ft.; rec. 10 ft. sd. sat. with oil; "D" sd. oil sat. 8,445-69 ft.; Bodcaw sd. showed oil 8,583-97 ft.; set 7-in. csg. 8,583 ft.; T.D. 8,600 ft.; comp.; 405 B.P.D.; ⅛-in. ck.; oil grav. 40.5; T.P. 1,475 lbs.; C.P. 1,530 lbs.; gas-oil ratio 885 : 1.

SOUTH LOUISIANA FIELDS

Abbeville—Vermilion Parish

Continental Oil Co. No. 1 Franciol, Sec. 67-12s-3e. Drk

Bancroft—Beauregard Parish

Republic Prod. Co. No. 6 Columbia Ld. & Tbr. Co., Sec. 15-6s-13w. R.U.

Republic Prod. Co. No. 4 Lutcher Moore Lbr. Co., Sec. 16-6s-13w. Drk.

Republic Prod. Co. No. 5 Lutcher Moore Lbr. Co., Sec. 15-6s-13w. Drlg. sh.&L. 6,685 ft.

Republic Prod. Co. No. 1 Louis Whitman, Sec. 15-6s-13w. T.D. 7,344 ft.; P.B.; sdtrkd.; drlg. sh.&L. 6,934 ft.

Bateman Lake—St. Mary Parish

Texas Co. No. 2 State-Bateman Lake, Sec. 21-16s-12e. R.U.

Baton Rouge—East Baton Rouge Parish

Geo. Helis et al No. 1 McInnis, Sec. 36-8s-1w. Loc.

Wm. Helis No. 5 Duplantier, Sec. 65-7s-1w. Top sd. 6,451 ft.; T.D. 6,475 ft.; 7-in. csg. 6,459 ft.; setting screen.

Wm. Helis et al No. 3 Harry B. Nelson, Sec. 36-7s-1w. 10¾-in. csg. 2,072 ft.; T.D. 6,476 ft.; top sd. 6,455 ft.; 7-in. csg. 6,459 ft.; I.P. 405 B.P.D.; ⅛-in. ck.

Bay St. Elaine—Terrebonne Parish

Texas Co. No. 2 L.L.&E., Bay St. Elaine, Sec. 18-22s-18e. T.D. 6,500 ft.; run electrical survey.

Texas Co. No. 2-B State-Bay, Sec. 13-22s-17e. T.D. 6,514 ft.; 9⅝-in. csg. 6,512 ft.

Bayou Bouillon—St. Mary Parish

Transcontinental Oil Co. No. 5 State, Sec. 13-9s-9e. T.D. 1,275 ft.; 10¾-in. csg. 1,170 ft.; T.D. 3,100 ft.; P.B. 1,700 ft.; prep. to sdtrk. 1,400 ft.; cd. oil sd. 3,360-80 ft.; 7-in. csg. 3,510 ft.; perf. csg. 3,366-82 ft.; tstd. 40,000,000 cu. ft. gas; S.I.

Bayou Chociaw—West Baton Rouge

La. Crusader No. 5 Schwing, Sec. 29-8s-11e. 9⅝-in. csg. 2,250 ft.; T.D. 4,755 ft.; P.B. 4,200 ft.; sdtrkd. 4,214 ft.; T.D. 7,878 ft.; P.B. 7,530 ft.; stk. D.S. P.B. 5,800 ft.; sdtrkd.; T.D. 5,890 ft.; P.B. 5,200 ft.; drlg. sh. 7,635 ft.

La. Crusader No. 6 Schwing, Sec. 29-8s-11e. Drlg. sh. 6,910 ft.

Bayou Des Allemands—St. Charles Parish

Amerada Pet. Corp. No. 3 St. Charles Ld. Co., Sec. 13-15s-20e. Drlg. sh.&L. 6,800 ft.

Amerada Pet. Corp. No. 4 St. Charles Ld. Co., Sec. 13-15s-2e. Loc.

Caillou Island—Terrebonne Parish

Texas Co. No. 29 State, Sec. 17-23s-20e. Rig.

Cameron Meadows—Cameron

Burton-Sutton Oil Co. No. 26 Sch. Ld., Sec. 16-14s-13w. T.D. 2,465 ft.; 13⅜-in. csg. 2,465 ft.; T.D. 6,564 ft.; P.B.; sdtrkd.; drlg. sh.&L. 5,548 ft.

Chacahoula—La Fourche Parish

Sun Oil Co. No. 5 Dibert, Stark & Brown Cypress Co., Sec. 70-15s-15e. 16-in. csg. 110 ft.; 10¾-in. csg. 1,865 ft.; drlg. sd. 5,204 ft.

Sun Oil Co. No. 4 Dibert Stark and Brown Cypress Co., Sec. 70-15s-15e. T.D. 7,794 ft.; P.B. 6,764 ft.

Charenton—St. Mary Parish

Edwards & Aber No. 2 Blanchard, Sec. 21-13s-9e. T.D. 1,148 ft.; 5½-in. csg. 1,141 ft.; tstd. S.W.; P.B. 1,132 ft.; perf. csg. 1,125-32 ft.; W.O.S.R.

Kinsley Oil, Inc., No. 1-B Hertel, Sec. 30-13s-9e. Loc.

Pan American Prod. Co. No. 1 Achee, Sec. 21-13s-9e. Loc.

J. P. Scranton No. 1 State Bayou, Sec. 30-13s-10e. R.U.R.

Convent—St. James Parish

Continental Oil Co. No. 2 Realty Operators, Inc., Sec. 16. 13⅜-in. csg. 1,492 ft.; T.D. 7,889 ft.; P.B. 7,275 ft.; sdtrkd. 7,305 ft.; drlg. L.&sh. 7,559 ft.

Creole—Cameron Parish

Superior Oil Co. No. 5 State-Gulf of Mexico, Sec. 4-15s-8w. T.D. 4,253 ft.; P.B.; sdtrkd.; drlg. sh. 1,385 ft.

Darrow—Ascension Parish

Humble O. & R. Co. No. 2 Rose, Sec. 33-10s-2e. T.D. 3,005 ft.

Kiva Oil Co. No. 1 Duplessis, sec. 69-10s 2w. S.D. 2,523 ft.

Dog Lake—Terrebonne Parish

Texas Co. No. 22 State, Sec. 5-22s-16e. 13⅜-in. csg. 2,030 ft.; T.D. 6,904 ft.; 7-in. csg. 6,901 ft.

Edgerly Field—Calcasieu Parish

R. H. Kean et al No. 1 M. J. Muller et al, Sec. 29-9s-11w. 7-in. csg. 2,804 ft.; bailed S.W.; S.D. 3,050 ft.

Eola—Avoyelles Parish

Sid Richardson No. 2 Haas Inv. Co., Sec. 7-2s-3e. R.U.

Fausse Point—Iberia Parish

Texas Co. No. 5 State Lake-Fausse Point, Sec. 35-11s-8e. Drlg. sh. 10,443 ft.

Garden Island—Plaquemines Parish

Texas Co. No. 31 State, Sec. 28-23s-33e. Drlg. sh. 6,915 ft.

Gillis—Calcasieu Parish

Fohs Oil Co. No. 1 Green Heres, Sec. 11-9s-8w. R.U.

Golden Meadows—La Fourche Parish

Martex Pet. Corp. No. 1 Falgout Holding Co., Inc., Sec. 9-19s-22e. Drk.

Grand Bay—Plaquemines Parish

Gulf Oil Corp. No. 25-A Erwin, Sec. 13-12s-10w. Drk.

Gulf Oil Corp. No. 3 Grand Prairie, Sec. 6-20s-19e. 20-in. csg. 70 ft.; 13⅜-in. csg. 1,600 ft.; T.D. 7,141 ft.; T. sd. 7,129 ft.; I.P. 284 B.P.D.; ¼-in. ck.

Gulf Oil Corp. No. 4 Grand Prairie Lve. Dist., Sec. 48-20s-18e. Loc.

Gulf Oil Corp. No. 2 State, Sec. 6-20s-19e. Loc.

Gueydan—Acadia Parish

A. M. Barbe No. 1 G. L. Humble, Sec. 27-11s-1w. T.D. 8,685 ft.; perf. csg. 4,490-96 ft.; tstd. S.W.; S.D.

Hackberry—Cameron Parish

F. W. Bennett No. 1 Bickford, Sec. 37 12s-10w. Drlg. sh. 6,390 ft.

Gulf Ref. Co. No. 25-A Erwin, Sec. 13-12s-10w. Drlg. sdy. sh. 2,428 ft.

Stanolind O. & G. Co. No. 56 State, Kelso Bayou, Sec. 22-12s-10w. T.D. 4,698 ft.; abd.

Superior Oil Co. No. 2-C Kaough, Sec. 30-12s-10w. R.U.

Texas Co. No. 16-B State-Hackberry, Twp. 12s-9w. T.D. 8,201 ft.; salt; 7-in. csg. 7,950 ft.

Union Sulphur Co. No. 11 Doiron, Sec 37-12s-10w. T.D. 7,203 ft.; 7-in. csg. 7,108 ft.

Union Sulphur Co. No. 12 Doiron, Sec. 37-12s-10w. Drlg. gbo. 1,558 ft.

Union Sulphur Co. No. 13 Doiron, Sec. 37-12s-10w. Loc.

Union Sulphur Co. No. 45 Watkins, Sec. 13-12s-10w. Drlg. sd.&sh. 341 ft.

Horseshoe Bayou—St. Mary Parish

Texas Co. No. 2 State, Sec. 37-17s-9e. 9⅝-in. csg. 11,631 ft.; T.D. 12,770 ft.; set 1,659 ft. of 6⅝-in. csg. at 12,645 ft.; lost D.S.; fsg.

Jeanerette—St. Mary Parish

Herton Oil Co. No. 1 Adeline Sugar Co., Sec. 39-13s-9e. T.D. 10,347 ft.; abd.

Jefferson Island—Iberia Parish

Texas Co. No. 2 Jefferson Island, Sec. 58-12-5e. 18⅝-in. csg. 40 ft.; drlg. L.& sh. 7,418 ft.

Texas Co. No. 2 State-Lake Peigneur, Twp. 12s-5w. Drlg. sh. 1,060 ft.

Jennings—Acadia Parish

W. T. Burton No. 6 Roboria, Sec. 41-9s-2w. 7-in. csg. 6,721 ft.; fsg. tbg.; T.D. 6,997 ft.; sdtrkd. at 6,118 ft.; drld. to 6,178 ft.; sdtrkd. at 6,023 ft.; T.D. 6,732 ft.; trying to drill by fish; P.B. 6,104 ft.; W.O.C.; sdtrkd. 6,020 ft.; T.D. 6,056 ft.; 7-in. csg. 2,203 ft. and 10¾-in. csg. 2,108 ft.; sdtrkd.; drld into old hole; P.B.; sdtrkd. 2,302 ft.; drlg. sh.&L. 6,327 ft.

Glassell & Glassell No. 5 McFarlain, Sec. 41-9s-2w. Drlg. sdy. sh. 4,100 ft.

Glassell & Glassell No. 6 McFarlain, Sec. 41-9s-2w. Drlg. sh. 5,280 ft.

L. & L. Oil Co. No. 4 Houssiere Latreille, Sec. 47-9s-2w. 7-in. csg. 1,817 ft.; T.D. 1,881 ft.; P.B. 1,848 ft.; drld. out 1,848 ft.; sanded up; C.O.

Shell Pet. Corp. No. 1 Prather. Drlg. sdy. sh. 5,863 ft.

Stanolind O. & G. Co. No. 114 Crowley Oil & Mineral Co., Sec. 48-9s-2w. R.U.

Superior Oil Co. No. 16 Wm. Leckelt, Sec. 42-9s-2w. Drlg. sh. 8,025 ft.

Lafitte—Jefferson Parish

Texas Co. No. 1 Sch. Bd., Sec. 16-17s-24e. 13⅜-in. csg. 2,030 ft.; T.D. 10,622 ft.; 9⅝-in. csg. 10,622 ft.; T.D. 11,961 ft.; well tried to blowout; stk. D.S.

Texas Co. No. 2 State-Bayou Norman, Sec. 21-17s-24e. Loc.

Lake Hermitage—Plaquemines Parish

Gulf Oil Corp.-Humble O. & R. Co. No. 9 La Fourche Basin, Sec. 2-18s-25e. T.D. 3,166 ft.; 7-in. csg. 3,121 ft.

Lake Pelto—Terrebonne Parish

Texas Co. No. 22 State, Sec. 8-23s-18e. T.D. 6,027 ft.; sdtrkd.; T.D. 5,388 ft.; 7-in. csg. 5,224 ft.; perf. csg. 5,104-60 ft.; I.P. 64 B.P.D.; ⅛-in. ck.

Leesville—La Fourche Parish

Lincoln Oil Co. No. 2 Visier, Sec. 26-21s-22e. T.D. 4,188 ft.; P.B. 3,660 ft.; would not pmp.; abd.

Texas Co. No. 7 Leeville, Sec. 27-21s-22e. T.D. 8,667 ft.; D.S. stk.; sdtrkd.; T.D. 8,436 ft.; sdtrkd.; T.D. 8,685 ft.; stk. 9⅝-in. csg. at 8,577 ft.; sdtrkd. 8,440 ft.; stk. D.S.; sdtrkd.; T. salt 9,713 ft.; T.D. 9,723 ft.; P.B. 8,100 ft.; perf. csg. 8,040-90 ft.; rec. 9 stands of oil; tstg.

Lirette—Terrebonne Parish

Humble O. & R. Co. No. 2 H. J. Ellender, Sec. 32-19s-19e. T.D. 8,564 ft.; rmg.

Lake Long—La Fourche Parish

Fohs Oil Co. No. 7 State-Lake Long, Twp. 17s-19e. 18⅝-in. csg. 295 ft.; T. D. 10,248 ft.; 7-in. csg. 9,928 ft.; P.B. 9,875 ft.; perf. csg. 9,862-68 ft.; tstd. 780 lbs. press.; recvd. 270 ft. drlg. mud, cut with gas; perf. csg. 9,876-9,882 ft.; recvd. 30 ft. of gas-cut mud; sqzd. off perf.; perf. csg. 9,200-08 ft.; tstd. S.W.

New Iberia—Iberia Parish

Canal Oil Co. No. 5 Sabatier, Sec. 54-12s-7e. T.D. 2,504 ft.; run csg.

Wm. Helis No. 8 Bullock, Sec. 25-12s-7e. Drlg. sdy. sh. 1,772 ft.

Wm. Helis No. 5 Schwing, Sec. 56-12s-7e. T.D. 4,954 ft.; P.B. 4,188 ft.; W. O.C.

Texas Co. No. 2 Bryant, Sec. 25-12s-7e. R.U.

Texas Co. No. 1 DeCuir, Sec. 25-12s-7e. Drlg. sh. 4,012 ft.

Texas Co. No. 2 Gonsoulin, Sec. 13-12s-7e. Drlg. sh.&shls. 6,297 ft.

Texas Co. No. 2-A Hanzon, Sec. 54-12s-7e. Drlg. sdy. sh. 6,365 ft.

Texas Co. No. 3-B Hanszen, Sec. 54-12s-7e. 7-in. csg. 6,838 ft.; cg. sdy. sh. 7,080 ft.

Texas Co. No. 1 Renaudet et al, Sec. 71-12s-7e. Drlg. sh.&L. 7,972 ft.

North Tepetate—Acadia Parish

Atlantic Ref. Co. No. 1 Alcide Fournerat, Sec. 11-7s-2w. T.D. 8,547 ft.; 7-in. csg. 8,048 ft.; perf. csg. 7,983-86 ft.; tstg.

Atlantic Ref. Co. No. 4 Klumpp, Sec. 12-7s-2w. Bldg. roads.

Port Barre—St. Landry Parish

Pan American Prod. Co. No. 5 Cormier, Sec. 4-6s-5e. T.D. 4,841 ft.; 7-in. csg. 4,812 ft.

Pan American Prod. Co. No. 1 Rene Nezat, T.D. 4,787 ft.; make D.S.T.

Y. D. Spill No. 1 Gaudet, Sec. 4-6s-5e. S.D. 4,700 ft.

Potash—Plaquemines Parish

Humble O. & R. Co. No. 38 Orleans Lve. Dist., Sec. 13-18s-15e. Drk.

Western Gulf Prod. Co. No. 1 Pascale, Sec. 6-18s-27e. Loc.

Western Gulf Prod. Co. No. 1-A Treadway, Sec. 6-18s-27e. Loc.; (cor.).

Quarantine Bay—Plaquemines Parish

Gulf Oil Corp. No. 2-A Orleans Levee Bd., Sec. 7-19s-17e. 9⅝-in. csg. 5,660 ft.; T.D. 8,187 ft.; 7-in. csg. 8,079 ft.

Gulf Ref. Co. No. 5 State, Sec. 17-19s-17e. Loc

Gulf Oil Corp. No. 9 State QQ, Sec. 18-19s-17e.. Loc.

South Houma—Terrebonne Parish

Shell Pet. Corp. No. 2 Peters. Drlg. sdy. sh. 8,659 ft.

Raceland—La Fourche Parish

Amerada Pet. Corp. No. 1 Godchaux Sugars, Inc., Sec. 34-15s-19e. 18⅝-in. csg. 262 ft.; T.D. 11,312 ft.; 7-in. csg. 11,312 ft.; T.A.

Amerada Pet. Corp. et al No. 2 Godchaux, Sec. 34-15s-19e. Drlg. sh. 10,045 ft.

South Roanoke—Jeff Davis Parish

Continental Oil Co. No. 2 Sturdivant, Sec. 36-10s-4w. Drlg. sh. 3,050 ft.

St. Martinsville—St. Martin Parish

Continental Oil Co. No. 1 Standard of Kans., Sec. 13-10s-6e. Cd. sd.&sh., oil odor 5,866-76 ft.; cg. sdy. sh. 6,710 ft.

Sweet Lake—Cameron Parish

Pure Oil Co. No. 1 Stanolind O. & G. Co. fee lse., Sec. 12-13s-8w. Perf. csg. 7,112-28 ft.; killed; reperf. csg. 7,137-42 ft.; I.P. 184 B.P.D.; 12/64-in. ck.

Valentine—La Fourche Parish

Pan American Prod. Co. No. 2-A Community, Sec. 58-17s-20e. T.D. 9,629 ft.; tried to blow out; P.B. 7,983 ft.; sdtkd.; 8,020 ft.; oil sd. 9,274-9,308 ft.; 5½-in. csg. 9,321 ft.; perf. csg. 9,271-75 ft.; I.P. 239 B.P.D.; ⅛-in. ck.

Venice—Plaquemines Parish

Tide Water Asso. Oil Co. No. 3 Buras Lve. Bd., Sec. 23-21s-30e. Drlg. sh. 201 ft.

Tide Water Asso. Oil Co. No. 9 Manhattan Land & Fruit Co., Sec. 26-21s-30e. 10¾-in. csg. 2,457 ft.; top salt 5,505 ft.; T.D. 5,565 ft.; sdtrkd. 4,647 ft.; top salt 5,603 ft.; P.B. 3,725 ft.; sdtrkd. 3,807 ft.; T.D. 5,770 ft.; 7-in. csg. 5,770 ft.; perf. csg. to test.

Villa Platte—Evangeline Parish

Continental Oil Co. No. 1 Crise Deville, Sec. 26-3s-2e. Loc.

Continental Oil Co. No. 1 Fontenot-Deshotels, Sec. 44-3s-2e. Drlg. sh. 7,039 ft.

Continental Oil Co. No. 1 Fontenot Ludean, Sec. 45-3s-2e. Drlg. sh. 8,885 ft.

Continental Oil Co. No. 3 Opelousas-St. Landry Securities Co., Sec. 44-3s-2e. R.U.

Continental Oil Co. No. 1 Rene McDaniel, Sec. 45-3s-2e. Loc.

Continental Oil Co. No. 1 Tate, Sec. 45-3s-2e. R.U.

Continental Oil Co. No. 2 Tate, Sec. 44-3s-2e. Drlg. sh. 8,827 ft.

Continental Oil Co. No. 2 Vidrine, Sec. 34-3s-2e. Drlg. L. 6,709 ft.

Continental Oil Co. No. 3 Vidrine, Deville, Sec. 46-3s-2e. Loc.

Vinton—Calcasieu Parish

J. M. Donald et al No. 1 Gordon, Benchenstein-Flynn, Sec. 34-10s-12w. T.D. 1,000 ft.; W.O.C.

West Lake Verret—St. Martin Parish

Shell Pet. Corp. No. 2 Jeanerette, Sec. 14-14s-12e. T.D. 8,057 ft.; sd. S.O.; top sd. 8,046 ft.; 7-in. csg. 8,040 ft.; D.S.T. rec. 12 stands of 37-grav. oil; I.P. 210 bbls. P.L.O., 360 bbls. S.W. per day; 15/64-in. ck.

Woodlawn—Jeff Davis Parish

Union Sulphur Co. No. 4 Calcasieu Natl. Bnk., Sec. 12-9s-6w. Drlg. sd. 5,725 ft.

Union Sulphur Co. No. 2 Osmon, Sec. 7 9s-5w. Drlg. sd.&sh. 8,642 ft.

Union Sulphur Co. No. 1 A. H. Thomas, Sec. 12-9s-6w. T.D. 9,552 ft.; abd.

S. LOUISIANA WILDCATS

Acadia Parish

T. T. Tolson et al No. 1 J. Turner, Sec. 25-7s-1e. M.I.M.

Tri Parish Drillers, Inc., No. 1 Paul Stag, Sec. 4-7s-1w. Drk.

Assumption Parish

Humble O. & R. Co. No. 1 Milliken & Farewell Co., Inc., Sec. 79-14s-14e. 13⅜-in. csg. 2,978 ft.; drlg. sd. 10,305 ft.

Calcasieu Parish

David B. MacDaniel No. 2 Sch. Ld., Sec. 16-9s-7w. 15½-in. csg. 46 ft.; 10¾-in. csg. 1,299 ft.; T.D. 7,890 ft.; S.D.

Cameron Parish

Humble O. & R. Co. No. 1 Cameron Parish Sch. Ld., Sec. 16-12s-6w. Cg. sd. 8,451 ft.

Superior Oil Co. et al No. 1 Delmer, Sec. 32-14s-8w (core test). T.D. 7,490 ft.; abd.

Superior Oil Co. No. 2 John Sells, Sec. 4-15s-8w. Bldg. road.

Iberia Parish

Texas Co. No. 1 Petit Anse, Sec. 59-13s-6e. Drlg. sh. 6,345 ft.

Texas Co. No. 3-B State, Vermilion Bay, Twp. 16s-5e. R.U.

Texas Co. No. 2-B Vermilion Bay, Twp. 16s-5e. T.D. 9,667 ft.; cleaned hole with reversing tool to 6,381 ft.; twisted off D.S.; T.A.

Iberville Parish

California Co. No. 1 Schwing Lbr. Co., Sec. 96-10s-10e. 20-in. csg. 177 ft.; 9⅝-in. csg.; drlg. sh. 9,842 ft.

Shell Pet. Corp. No. 1 Natalbany Lbr Co., Sec. 18-9s-2e. Drlg. sh. 5,360 ft.

La Fourche Parish

J. Perry Scranton No. 1 Martinez, Sec. 133-15s-17e. T.D. 1,549 ft.; abd.

Texas Co. No. 1 L.L.&E. Golden Meadows, Sec. 77-19s-21e. Drlg. sh. 10,006 ft.

Texas Co. No. 1 State-Catfish Lake, Sec. 77-19s-21e. 18⅝-in. csg. 90 ft.; T.D. 8,205 ft.; D.S. stk.; P.B. 5,783 ft.; sdtrkd.; drlg. sdy. sh. 9,309 ft.

Orleans Parish

W. T. Burton No. 1 L.&N.R.R., Sec. 18-11s-15e. Drlg. sh. 1,000 ft.

W. T. Burton No. 3 L.&N.R.R., Sec. 25-11s-14e. Loc.

W. T. Burton No. 1-B R. E. E. de Montluzin, Sec. 1-10s-13e. Drk.

W. T. Burton No. 1 State-Lake Pontchartrain, Twp. 10s-13e. T.D. 8,367 ft.; P.B. 7,775 ft.; sdtrkd. at 7,959 ft.; T. D. 8,165 ft.; 9⅝-in. csg. 8,165 ft.; T.D. 8,241 ft.; tstd. S.W.; D.S.T. 8,135-8,241 ft.; T.D. 11,149 ft.; cutting and pulling stk. D.S.; mixing mud.

Plaquemines Parish

Texas Co. No. 1 L.L.&E. Bastian Bay. Sec. 43-20s-28e. Drlg. sh. 8,821 ft.; cd. sd. oil odor 7,952-56 ft. and 8,298-8,300 ft.

Rapides Parish

Gulf States Explin. No. 1 Erwin & Bishop, Sec. 35-1n-3w. Loc.

St. Bernard Parish

Gulf Ref. Co. No. 4-State-R.R. (Lake Borgne), Twp. 12s-15e. 9⅝-in. csg. 8,161 ft.; drlg. sd. 10,632 ft.

Wm. Heils et al No. 1 Mereaux Munez, Sec. 34-12s-12e. T.D. 9,530 ft.; heaving sh.; fsg. for D.S.

Vendome Pet. Corp. No. 1 Kenilworth Plantation, Sec. 59-13s-14e. Drlg. sh. 10,665 ft.

St. Charles Parish

Texas Co. No. 1 L.L.&E. Paradis, Sec 39-14s-20e. T.D. 8,975 ft.; run protection csg.

St. James Parish

Shell Pet. Corp. No. 1 Shexnayder, Sec. 38-12s-15e. T.D. 9,773 ft.; run 9⅝-in. csg.

St. Martin Parish

Magnolia Pet. Co. No. 1 Mercelin, Sec. 8-10s-7e. Drlg. sh. 1,878 ft.

Texas Co. No. 11 St. Martin Ld. Co., Sec. 21-8s-7e. Top salt 8,904 ft.; T.D. 9,404 ft.; 7-in. csg. 8,912 ft.; P.B. 7,175 ft.; drld. out to bttm.; P.B. 8,080 ft.; perf. csg. 8,060-70 ft.; tstd. mud, gas and S.W.; sqzd. off perf.; perf. csg. 8,060-65 ft.; tested 38 stands oil and gas showing fresh wtr.; set screen and lnr.; pmpg.; showing est. 25 B.O.; 7 lnr.; lowered tbg. to 6,987 ft.; pmpg. and swbg. making est. 120 bbls. net oil per day with 57% S.W.; tstg.; pld. rods and tbg.; set cmt. plug 7,630-7,812 ft.; drlg. out cmt. to 7,670 ft.

St. Mary Parish

Phillips Pet. Co. No. 1 Whitney Natl. Bnk., Sec. 13-15s-12e. Drlg. sh. 4,610 ft.

St. Tammany Parish

A. P. Portas No. 1 W. C. Forbes, Sec. 33-7s-15e. Drk.

Vermilion Parish

Texas Co. No. 1 Continental Ld. & Fur Co., Sec. 29-18s-14e. 18⅝-in. csg. 101 ft.; T.D. 10,039 ft.; P.B. 9,852 ft. sdtrkd. 9,984 ft.; T.D. 12,483 ft.; shot pipe off at 9,950 ft.; milling on junk.

Texas Co. No. 2 State-Coon Point, Twp. 23s-14e. 13⅜-in. csg. 1,900 ft.; T.D. 2,851 ft.; driving piling.

Housh & Thompson No. 1 Saige, S. Lewis Sur. T.D. 6,838 ft.; tstg.

Kirby Pet. Co. No. 1 Daniels, S. S. Reynolds Sur. Drlg. sh. 4,020 ft.

Union Prod. Co. No. 2 Warneke, Sam Lewis Sur. T.D. 6,841 ft.; perf. csg. 6,827-30 ft.; tstg.

Friendswood—Harris County

Humble O. & R. Co. No. 29 Beemer, T. Choate Sur. T.D. 6,041 ft.; W.O.C.

Humble O. & R. Co. No. 1 J. L. Jones, Perry & Austin Sur. Drk.

Humble O. & R. Co. No. 3 Settegast, T. Choate Sur. Drk.

Humble O. & R. Co. No. 1 E. E. Watson. Drk.

Humble O. & R. Co. No. 6-B West, L. Hemenway Sur. T.D. 6,042 ft.; W.O.C.

Humble O. & R. Co. No. 8-B Humble-West, Luke Hemenway Sur. Drlg. sh. 5,030 ft.

Cheek—Jefferson County

Geo. H. Echols No. 1 Beaumont Launch Club, C. Hildebrandt Sur. Drlg. sh. 600 ft.

Humble O. & R. Co. No. 1 Broussard Tr., C. Hildebrandt Sur. Drlg. sh. 3,639 ft.

Humble O. & R. Co. No. 1 E. K. Failor, C. Hildebrandt Sur. T.D. 7,740 ft.; 5½-in. csg. 7,740 ft.; perf. 7,722-27 ft.; killed to recomp.; gas-oil ratio too high; reperf. csg. 7,722-24 ft.; tstg.

Humble O. & R. Co. No. 1 Pitre, C. Hillebrandt Sur. Loc.

Cordele—Jackson County

H. J. Porter No. 1 Woussi, Peter White Sur. Loc.

Esperson—Liberty County

General Crude Oil Co. No. 1 Burgess et al, A. McNeil Sur. R.U.

Hardin—Liberty County

Atlantic Ref. Co. No. 1 Rives, A. B. Hardin Sur. Drlg. sh. 5,816 ft.

Gulf Oil Corp. No. 4 Cessna, H. B. Johnston Sur. R.U.

Texas Co. No. 2 Smith, A. A. Hardin Sur. R.U.

Orange—Orange County

Continental Oil Co. No. 18 Chesson, Wm. Dyson Sur. Loc.

Gulf Oil Corp. No. 2 Laflour, Wm. Dyson Sur. R.U.

Gulf Oil Corp. No. 10-A Winfree, Wm. Dyson Sur. Loc.

Hankamer et al No. 1 Conley, Wm. Dyson Sur. Cg. sh. 5,910 ft.

John Mayo No. 1 M. J. Williams, J. Dyson Sur. Drk.

Union Prod. Co. No. 2 Lutcher Moore. J. Dyson Sur. T.D. 6,012 ft.; perf. csg. 5,522-32 ft.

Port Neches—Orange County

Texas Co. No. 13 Kuhn, M. E. Hall Sur. Spd.

Ace—Polk County

Peyton Bros. No. 3-B Kirby West, G. & Thomas Sur. Rec. 450 ft. P.L.O.; D.S. T. 7,745-55 ft.; T.D. 7,788 ft.; perf. csg. 7,748-62 ft.; flwg. wash wtr. and oil.

Dick Schwab No. 1-C Kirby-West Lbr. Co., G. A. Thomas Sur. Loc.

Shell Pet. Corp. No. 1 Doucett, P. A. Sublett Sur. Drlg. sh. 1,803 ft.

Shell Pet. Corp. No. 2 Doucett, P. A. Sublett Sur. Loc.

Segno—Polk County

Gulf Oil Corp. No. 3-B Quinn, A. Morales Sur. T.D. 5,274 ft., sd.

Gulf Oil Corp. No. 1 Ragan, I.&G.N. Sur. No. 15. R.U.

Gulf Oil Corp. No. 5 Ragan, I.&G.N. Sur. No. 15. Loc.

Gulf Oil Corp. No. 6 Ragan, I.&G.N. Sur. No. 15. Drlg. sh. 4,339 ft.

Spurger—Tyler County

Republic Prod. Co. No. 17 fee, N. Hurd Sur. Drlg. sh. 6,936 ft.

Katy—Waller County

Stanolind O. & G. Co. No. 1 Cohee, Sec 109, H.&T.C. Sur. T.D. 7,400 ft.; 5½-in. csg. 7,387½ ft.; tstg.

Stanolind O. & G. Co. No. 1 McCarthy, Williamson, H.&T.C. Sur. Loc.

Sur. (N flank Big Creek). T.D. 6,200 ft.; abd.

Galveston County

Sun Oil Co. No. 2 Cade, A. Dickson Sur. Drlg. sh. 4,930 ft.

Harris County

H. C. Cockburn No. 1 Lena Griffith, Adam Sur. Loc.

Cron & Gracey No. 1 McDonald, Andrew Lawson Sur. R.U.

H. H. Givens No. 2 F. K. Adone, David Middleton Sur. Drk.

Jefferson County

British American Oil Co. No. 3 Glady City, J. A. Veatch Sur. (SW flank Spindletop). Drlg. sh. 4,339 ft.

I. E. Harwell No. 1 State, Gulf of Mexico, T.D. 5,840 ft.; D.S. stk.; pulled in two; S.D.

Humble O. & R. Co. No. 13-B McFaddin-State, Sec. 8. 10¾-in. csg. 2,758 ft.; T.D. 5,859 ft.; D.S. stk.; backed off at 3,688 ft.; P.B. 4,220 ft.; sdtrkd.; T.D. 6,014 ft.; P.B. to sdtrk.

Matagorda County

Maja Oil Co. No. 1 Robbins, A. Sheppard Sur. R.U.

Sun Oil Co. No. 1 Cavallin, Theo. F. Koch subd., John Duncan Sur. 9⅝-in. csg. 8,502 ft.; drlg. sd.&sh. 8,786 ft.

Montgomery County

Deep South Pet. Co. No. 1-A Foster Lbr Co., Pryor Bryan Sur. Loc.

H. A. Pennington et al No. 1 F. L. Banker, L. M. H. Washington Sur. S.D. 1,033 ft.

J. Smith et al No. 1 J. V. Scott, F. A. B. Wheeler Sur. S.D. 3,623 ft.

Orange County

Sun Oil Co. No. 1 Lutcher-Moore Lbr. Co., B. Johnson Sur. T.D. 7,867 ft.; P.B.; sdtrkd.; 7-in. csg. 9,402 ft.; T.D. 9,705 ft.; D.S. stk.; P.B. 8,384 ft.; sdtrkd.; T.D. 9,664 ft.; P.B. 8,900 ft.; drld. to 9,020 ft.; perf. csg. 8,995-9,010 ft.; tstg.; flwg. est. 100 B.F.P.D., 22 to 85% S.W. and 15 to 78% oil, varying at various times; well went dead; prep. to rework.

San Jacinto County

J. W. Frazier No. 1 Annie Smith, J. D. Martinez Sur. No. 10. M.I.M.

Tyler County

J. C. Bonham No. 1 Southwestern Lbr. Co. T.D. 1,440 ft.; abd.

Washington County

Mount Selman Oil Co. No. 1 Fritz Fuelberg, John Lightfoot Sur. R.U.

S. W. TEXAS WILDCATS

Bell County

M. M. Gordon No. 1 Steele, Oliver T. Tyler Sur. S.D. 1,201 ft.

G. F. Shelton et al No. 1 Nelson, Michael Griffin Sur. S.D. 1,208 ft.

Bexar County

Fred Beatty No. 1 Joppich, Iginio Tejado Sur. No. 186. T.D. 128 ft.; run surf. csg.

H. G. Krumm No. 1 Kempf, Samuel McCollough, Jr., Sur. 54. T.D. 770 ft.; prep. to pmp.

Charles Schreiner No. 1 McCloskey, L. Desague Sur. No. 134. 7-in. csg. 710 ft.; pmpg. est. 6 B.O.P.D.; tstg.

L. L. Skaggs No. 1 Braubach, Fernando Rodriquez Sur. R.U.

David Stiles No. 1 Minna Sherrer, Jos Antonio de la Garza Sur. T.D. 1,077 ft.; 6⅝-in. csg. 920 ft.; abd.

TEXAS

Week Ending February 11

GULF COAST FIELDS

Hastings Field—Brazoria County

Humble O. & R. Co. No. 2 Lerew, C. W. Groos Sur., Sec. 38. Drlg. sh. 5,436 ft.

Stanolind O. & G. Co. No. 2-C Cecil Brown, W. H. Snyder Sur. Drk.

Old Ocean—Brazoria County

Commerce Oil Co. No. 1 S. M. Patterson, Polly & Chance Sur. 9⅝-in. csg. 7,000 ft.; run electrical cg. survey; T. D. 10,500 ft.; perf. csg. 10,250-75 ft., 10,160 ft.; tstd. S.W.; perf. csg. 9,950-90 ft.; tstd. S.W.

Harrison & Abercrombie No. 3 Armstrong Plantation, Polley & Chance Sur. Cg. sdy. sh. 10,039 ft.

Harrison & Abercrombie No. 5 Armstrong, Polly & Chance Sur. Spd.

Harrison & Abercrombie No. 6 Bernard River Ld. & Dev. Co., C. Breen Sur. Drlg. sh. 1,236 ft.

Harrison & Abercrombie No. 1 Lola Buck, Polly & Chance Sur. Cg. sh. 9,869 ft.

Sun Oil Co. No. 2 Campbell, Chas. Breen Sur. R.U.

Cedar Point—Chambers County

Standard Oil Co. of Texas et al No. 56-94 State. R.U.

Seabreeze—Chambers County

Sun Oil Co. No. 2 Barrow, A. Ybarbo Sur. Spd.

Sun Oil Co. No. 1 Pipkin, W. M. Mays Sur. No. 104. Drlg sh. 1,236 ft.

West Columbia—Brazoria County

Frost & Dunman No. 1 E. C. Parker, G. Tennille Sur. Drlg. 1,300 ft.

General Crude Oil Co. No. 1-B Campbell, S. M. Williams Sur. Bldg. road.

Texas Co. No. 31 Abrams, G. Tennille Sur. Loc.

Texas Co. No. 11 Phillips, G. Tennille Sur. Drlg. sh. 1,130 ft.

Green's Lake—Galveston County

Sun Oil Co. No. 3 Houston Farms Dev. Co., D. Buckley Sur. Drlg. sh. 1,339 ft.

League City—Galveston County

Geo. Echols No. 2 J. H. Ross, Perry & Austin Sur. 10¾-in. csg. 2,550 ft.; cg. sdy. sh. 9,079 ft.

Gulfboard Oil Corp. et al No. 1 Ross-Stewart, Perry & Austin Sur. 10¾-in. csg. 3,100 ft.; drlg. sh. 9,517 ft.

Midstates Oil Co. No. 2-A Maco Stewart, Perry & Austin Sur. Drlg. sh. 8,495 ft.

Phillips Pet. Co. No. 1 Brittnacher, S. F. Austin Sur. Drlg. sh. 8,379 ft.

Phillips Pet. Co. No. 1 J. C. Ott, S. F. Austin Sur. Cd. O.S. 7,070-9,110 ft.; drlg. sh. 9,847 ft.

Phillips Pet. Co. No. 1 Dr. Patton, S. F. Austin Sur. T.D. 10,535 ft.; 5½-in. csg. 10,412 ft.; perf. csg. 10,156-80 ft. and 10,115-27 ft.; tstd. S.W.

Phillips Pet. Co. No. 1 Stewart, Title Guaranty, S. F. Austin Sur. Top sd. 9,072 ft.; T.D. 9,274 ft.; P.B.; sdtrkd.; drlg. sh. 8,715 ft.

West Prod. Co. No. 1 fee, Lot 2, Blk. 5, Perry & Austin Sur. Loc.

Bammel—Harris County

H. M. Harrell No. 1 Bahr, J. Schnell & H. Simmons Sur. Loc.

Clear Lake—Harris County

Humble O. & R. Co. No. 3 Hutcheson, Wm. Dobie Sur. R.U.

Humble O. & R. Co. No. 3-C Humble-West fee, Geo. B. McKinstry Sur. T.D. 5,970 ft.; 5½-in. csg. 5,967 ft.; perf. csg. 5,833-35 ft.; flwd. oil and S.W.; killed; reperf. csg.; flwg. oil and wash wtr.

Clinton—Harris County

Stanolind O. & G. Co. No. 2 Edwards, Reels & Trobough Sur. Drk.

Stanolind O. & G. Co. No. 1-B Oates, Reels & Trobough Sur. T.D. 4,608 ft.; abd.

Eureka—Harris County

Jack Frazier No. 1 W. T. Helberg, H Reinerman Sur. R.U.

Jack Frazier No. 3 Helberg, J. Reiner man Sur. T.D. 7,720 ft.; perf. csg. 7,-694-7,704 ft.

Jack Frazier No. 1, Shady Acres subd., Henry Reinerman Sur. R.U.

Housh & Thompson No. 1 Helberg et al, H. Reinerman Sur. Top sd. 7,687 ft.; 5½-in. csg. 7,718 ft.; tstg.

Houston Oil Co. No. 3 Helberg & Lackner, J. Reinerman Sur. Loc.

Houston Oil Co. No. 2 D. Lackner, H. Reinerman Sur. R.U.

Fairbanks—Harris County

L. Barrett No. 1 Jack Jeter, J. Bays Sur. R.U.

E. M. Hailey No. 1 Albert Brown, J. Clarkson Sur. T.D. 6,842 ft.; 5½-in. csg. 6,841 ft.; comp.; no ga.

GULF COAST WILDCATS

Austin County

Crown Cent. Pet. Corp. et al No. 1 Huebner, Renkestolz Sur. T.D. 4,004 ft.; abd.

Brazoria County

Fabriguze et al No. 1 Freeport Sulphur, Stephen F. Austin Sur. (Bryan Mound) M.I.M.

Humble O. & R. Co. No. 1 Walker, S. Marsh Sur. 13⅜-in. csg. 2,419 ft.; drlg. sdy. sh. 8,943 ft.

Texas Co. No. 6 Freeport Sulphur Co C. Ariola Sur. 10¾-in. csg. 1,270 ft.; drlg. sh. 2,639 ft.

Chambers County

Geo. Anderson No. 1 Julia Casey, W. D. Smith Sur. Loc.

L. D. Roberts No. 1 C. H. Lang, T.&N. O. Sur. No. 35. Drk.; (cor.).

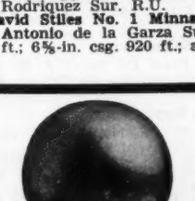
Colorado County

Mills Bennett Prod. Co. No. 1 J. M. Truchard, Ed Curbit Sur. 13⅜-in. csg. 968 ft.; drlg. sh. 5,878 ft.

Fort Bend County

Geo. Echols No. 1 Smith, Moses Shipman Sur. Drlg. sh. 5,268 ft.

N. W. Hunter No. 1 Lighau, B.B.B.&C.



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Ask for complete details and price list.

McGREGOR WORKING BARREL COMPANY

Bradford, Pa., U.S.A.

Joe Wagner et al No. 1 Florence Lamm. Manuel De Luna Sur. Drlg. sh. 803 ft.

Blanco County

E. L. Nixon No. 2 Crist, John McClenehen Sur. No. 94. S.D. 210 ft.

Brooks County

Humble O. & R. Co. No. 3 McGill Bros., Ygnacios Rivas La Blanca gr. T.D. 4,728 ft.; run electrical survey; I.P. 137 B.P.D.; 5/32-in. ck.

Humble O. & R. Co. No. 4 McGill Bros., LaBlanca gr., 1,866 ft. N of No. 1. Drlg. sh. 4,139 ft.

Southern Minerals Corp. No. 1 Proctor, Pal Furrias Farm & Garden Tracts. O.W.D.D.; T.D. 7,726 ft.; P.B. 6,880 ft.; perf. csg. 6,855-70 ft.; tstg. 5-in. csg. 6,900 ft.

Caldwell County

S. T. Dudley et al No. 1 Becker, L. L. Joseph Sur. T.D. 713 ft., abk.; 7-in. csg. 685 ft.; T.D. 1,117 ft.: Edw. L.; P.B. to test Austin chk.; S.D.; abd.

Comal County

O. W. Killam No. 1 Gruene, Henry Foster Sur. T.D. 1,109 ft.; D.S. stk.

De Witt County

Richardson et al No. 1 W. D. McCurdy, John Hunt Sur. T.D. 150 ft.

Duval County

Dan Auid et al No. 1 Pope Dimitt, Jose Marcelo Ynojosa gr. Loc.

J. W. Cosner et al No. 1 Cantu, Geraro Briones Sur. Cg. sh. 5,036 ft.

C. G. Glasscock No. 1 Nicholas Garcia, Santa Cruz De Concepcion gr. Drlg. sh. 2,969 ft.

Gravis and Doran No. 1 Parr, San Andres gr., 1 mi. N of Sweden field. Cg. sh. 5,386 ft.

Frank Gravis No. 3 Schallert, Seale, Morris & Seale Sur. No. 2550. T.D. 3,168 ft.; P.B. 1,800 ft.; prep. to sdtrk.

Hamill & Smith No. 1 Perez, Cordente Hrs. Drlg. sh. 1,706 ft.

Interstate Minerals, Inc., No. 1 Brooker, B.S&.F. Sur. 85. T.D. 2,903 ft.; abd.

Lanning & Coffield et al No. 1 W. T. Peters, C.C.S.D. Co. Sur. No. 66. Loc.

Magnolia Pet. Co. No. 1 Denman, Santos Garcia gr. Loc.

H. J. Porter et al No. 1-B Clara Driscoll, Rosa G. Gray Sur. Drlg. sh. 460 ft.

Porter and Blanchard No. 1 Yates, John Gray Sur. Drlg. sh. 2,075 ft.

Transwestern Oil Co. No. 16 Duval Co. Rnh. Co., Pilar Martinez Sur. T.D. 2,000 ft.; abd.

W. A. Wagner No. 1 D. J. Weikel, John H. Gibson Sur. No. 497. R.U. and S.D.

Goliad County

Martex Oil Co. No. 1 Wm. F. Albrecht, Thos. Hancock Sur. R.U.

Gonzales County

Otton Elder No. 1 Wilkinson, Russell Ward Sur. S.D. 425 ft.

Hochheim Dev. Trust No. 1 Dubose, E. G. Coffman Sur. 10-in. csg. 37 ft.; S.D. 1,170 ft.

A. L. Mitchell and L. W. Sorrell No. 1 A. I. Culpepper. Twisted off D.S.; T.D. 2,865 ft.; abd.

Guadalupe County

Frank Glenn No. 1 Appling, Harriet Cottle Sur. No. 14. T.D. 2,218 ft.; tstg. 2,130-37 ft.: 7-in. csg. 1,960 ft.; R.U. to pmp.; S.D.; swbd. S.S.O.

E. A. Weyel No. 1 Schraffel, R. B. White Sur. Drlg. sh. 760 ft.

R. A. Williams No. 1 Weber, Guadalupe Torres Sur. T.D. 1,483 ft. (cor.); 4½-in. csg. 1,468 ft.; S.D.

Hidalgo County

Pan American Prod. Co. No. 1 J. De la Vina Vicente Hinojosa gr. Cg. sh. 7,864 ft.

Jim Hogg County

Humble O. & R. Co. No. 7 Bass, San Raphael gr. Drlg. sh. 4,329 ft.

Humble O. & R. Co. No. 6 Kelsey Bass, San Rafel gr. T.D. 4,729 ft.; I.P. 32 bbls., 14 hrs.; ¼-in. ck.

Humble O. & R. Co. No. 1 Mestena O. & G. Co., Fowler & Rankin subd., Palitos Blanco gr., R. G. Sars Sur. 16-in. csg. 70 ft.; T.D. 2,007 ft.; 10¾-in. csg. 1,563 ft.; drlg. sh. 2,856 ft.

Johnson & Robinson No. 1 Palacios. Mary Montgomery Sur. S.D. 2,300 ft.

Jim Wells County

F. A. Gillespie & Sons No. 1 Shear, Blk. 24, Adam Beatty & Moulton Sur. Loc.

H. H. Howell et al No. 1 W. T. Wright, Ross M. Bridges Sur. T.D. 6,800 ft.; well tried to blowout at 6,500 ft.; 5½-in. csg. 6,790 ft.; will perf. csg. 6,646 ft.

H. H. Howell et al No. 2 Wright, A.&M G.R.R. Sur. Drlg. sh. 2,830 ft.

Magnolia Pet. Co. No. 1 Samuel Maun, Los Olmos y Loma Blanca gr. 7-in. csg. 6,314 ft.; drlg. sh. 7,278 ft.

W. H. Mathews No. 1 Frances Clark, Los Precenos gr. 10¾-in. csg. 617 ft. tstd. 450 lbs. press.; 1 qt. oil on D.S. T. 5,141-58 ft.; T.D. 5,330 ft.; 5½-in. csg. 5,309 ft.

Kendall County

H. N. Reid No. 1 Marguardt, J. Travuso Sur. No. 150½. S.D. 985 ft.

Kenedy County

Humble O. & R. Co. No. 1 Kenedy rnh., Penaseal gr. Loc.

Kinney County

Bob Rose No. 2 Gaebler, Dolores Soto de Beales gr. S.D. 300 ft.; abd.

Kleberg County

Pure Oil Co. No. 1 State, Tr. No. 155, Drlg. sh. 1,556 ft.

Lee County

Fred Pederson et al No. 1 Brown, David Hudson Sur. T.D. 6,404 ft.; acd.; R.U. pmpd. 100 bbls. fluid; 36 hrs.; 3 bbls. oily emulsion, bal. S.W.; S.D.

Live Oak County

Harry Hotchkin No. 1 Wade, J. Sommers Sur. No. 147. Loc.

L. W. Stieren No. 3 Lange, Thos. Adams Sur. T.D. 1,497 ft.

McMullen County

Boysen & Jones No. 1 Hagist, B.S.&F. Sur. No. 127. R.U.

Heilbrock and O'Farrell No. 1 Miles, J. Poitevent Sur. Loc.

R. P. Holland et al No. 1 Gayle, B.S.& F. Sur. T.D. 1,397 ft.; 5½-in. csg. 1,390 ft.; pmpd. 50 bbls., 21.9-grav. oil, 20 hrs.; tstg.

Merle Morton No. 1 Valadez, Antonio De La Rosa, Porc 85. Loc.

Mid-Western Pet. Corp. No. 1 C. E. Byrne, Geo. Pittuck Sur. R.U.

R. M. Strum and Womack No. 1 Smith and Leischner, A. Zumwalt Sur. S.D. 949 ft.

Medina County

J. I. and J. W. Cromwell No. 1 Tschirhart, I. J. Rogers Sur. No. 18. Loc.

Victor Ziegler No. 1 Paul Haby, Wm. G. Still Sur. No. 1. S.D. 875 ft.; prep. to run csg.

Milam County

Alex Krause No. 1 Graves, Jackson Hall Sur. S.D. 900 ft.

Nueces County

H. D. & H. Oil Co. No. 1 Wright, V. L. De Herrera gr. Drlg. sh. 1,930 ft.

Heep Oil Corp. et al No. 1 G. W. Smith, Jose Vicente Lopez de Herrera gr 10¾-in. csg. 1,090 ft.; T.D. 5,050 ft.; 7-in. csg. 5,049 ft.

Henshaw Bros. No. 1 Countiss, V. L. De Herrera gr. Drlg. sh. 1,050 ft.

O. W. Killam No. 1 J. O. Chapman, E. L. Rincon de Corpus Christi gr. R.U.

Republic Nat. Gas Co. No. 1 Robertson, Vincent Lopez de Herrera gr. 10-in. csg. 1,888 ft.; T.D. 5,525 ft.; 7-in. csg. 5,502 ft.

Seaboard Oil Co. No. 2 Wilson, Jose Vincente Lopez de Herrera Sur., Blk. 9, 13⅜-in. csg. 1,551 ft.; T.D. 5,037 ft.; 9⅝-in. csg. on bttm.; perf. csg. 4,994-97½ ft.; flwg. gas and wash wtr.; kld.; reperf. csg. 4,995-98 ft.; flwd. 50 bbls. P.L.O., 4 hrs.; ⅛-in. ck.; killed; reperf. csg. 4,996-99½ ft.; flwg. 14 B.P.H.; tstg.

Real County

Blakely Smith et al No. 1 Love Ranch, H.E.&W.T.R.R. Co. Sur. S.D. 310 ft.

Refugio County

Copano Oil Co. No. 1-C O'Connor, Timothy Hoyt Sur. Cd. O.R. 5856-76 ft.; 5½-in. csg. on bttm.; tstg.

Coronado Corp. No. 7 Rooke, Aldrete 6¼ Lge. T.D. 5,917 ft.; tstg.

Coronado Corp. No. 8 Rooke, Aldrete 6¼ Lge. T.D. 6,384 ft.; tstg.

Hewitt & Dougherty No. 1-B Rooke, Aldrete 6½ Lge. R.U.

San Patricio County

Culton et al No. 1 McCampbell, Peter Mahoney Sur. R.U.

Nueces Royalty Co. No. 1 Harries, J. Smith Sur. Drlg. sh. 6,290 ft.

Plymouth Oil Co. No. 1 Wilson, John Brown Sur. Spd.

Starr County

Banks Miller Oil Co. No. 1 Garcia, Juan Salinas Porc. 71. S.D. 680 ft.

Rhinehart and Bowman No. 1 Bowman, J. C. McCarty Sur. M.I.M.

Sun Oil Co. No. 4 McKinney, A. J. Smith Sur. No. 240. T.D. 5,382 ft.; tstg.

Sun Oil Co. No. 1-B Montalvo, Los Retachez gr. Cg. sd. 4,900 ft.

Sun Oil Co. No. 1 Olivarez, C.C.S.D.&R. G.N.G. Sur. Cg. 4,603 ft.

W. W. Zimmerman No. 1 M. S. Tijerina, H.E.&W.T.R.R. Sur. No. 299. R.U.

Travis County

Oscar Raesz et al No. 1 J. W. Swahn, Phillips McElroy Sur. No. 16. Drlg. sh. 265 ft.

Webb County

Houser & Campbell No. 1 Slator, Blk. 94 of Mission Oil Co. subd. of Jose B. Borego gr. Drlg. sdy. sh. 1,194 ft.

Williamson County

Fritz Fuchs No. 1 Schmidt, J. West Sur. Drlg. 967 ft.

Zapata County

C. H. Lewis et al No. 1 Flores, Charco De La India gr. Drlg. sh. 900 ft.; (corrected); no report.

Magnolia Pet. Co. No. 2 Duval County Ranch Co., Duval County Sch. Ld. No. 101. Drlg. 230 ft.

EAST TEXAS

(Border Counties)

Harrison County

F. H. Barnwell No. 1 Smith, A. P. Hope Sur. P.B. 2,425 ft.; tstd. dry; S.D.; W.O.

Marion County—Rodessa

Ark.-La. Gas Co. No. 2 Belcher, A. D. S. Coy Sur. Set 9⅝-in. csg. 1,022 ft.; drlg. sh.&L. 3,740 ft.

Texas Co. No. 3 Chatten, Wm. Meyers Sur. Set 9⅝-in. csg. 2,106 ft.; 7-in. csg. 5,967 ft.; T.D. 5,988 ft.; comp.; 230 B. P.D.; ½-in. ck.; T.P. 950 lbs.; C.P. 1,400 lbs.; used 3,000 gal. acd.

Marion County—Other

Tom Bell No. 1 Moseley, D. Lane Sur. Swbd. some oil; plg. tbg. 2,200 ft.

S. L. Fulton et al No. 1 Burks, G. Coor Sur. Spdg.

Van Horn & Clements No. 1 Berk, G. Coore Sur. R.U.

Sabine County

Hugo Allen No. 1 Brooks, Isaac Low Sur. S.D. 5,885 ft.; flows ½ to 3 bbls. 41-grav. oil and goes dead; C.P. 500 lbs.; will attempt to comp. as gas well.

WEST TEXAS WILDCATS

Andrews County

Atlantic and Standard No. 1-B Cowden, Sec. 1, Blk. 14, T.&P. Sur. U.R. 300 ft.; wshg. hole 4,160 ft.

Honolulu Oil Corp. No. 1-18 J. E. Parker, Sec. 18, Blk. A-44, P.S.L. Sur. D.&A. 4,803 ft.

Richmond Drlg. Co. No. 1 Bryant-Link, Sec. 7, Blk. 48, P.S.L. Sur. Drlg. 4,800 ft.

J. W. Tripplehorn No. 1 M. A. Thornberry, Sec. 2, Blk. 42-A. Tstg. 5 to 10 B.O.P.D., 4,468 ft.; prep. re-treat 4,480 ft.

Borden County

Continental Oil No. 1 L. S. Monger, Sec. 38, Blk. 31, T.&P. Sur.; 4,000-ft. test. M.I.T.

Brewster County

H. D. Wilcox No. 2 Kokernot, Sec. 23, Blk. C, J. V. Massey Sur. R.U.M.

Cochran County

T. G. Shaw, Tr., No. 1 Carrie S. Dean, Lge. 94. S.D.R. 4,979 ft.

Coke County

Barnett Pet. Co. No. 1 J. R. Mims, Sec. 30, Blk. W, T.&P. Sur. S.D. 1,861 ft.

Concho County

Clymore Co., Inc., No. 1 Hill, J. Frederick Sur. No. 1694. U.R. 750 ft.

Crane County

Great Western Prod. No. 1-B Univ., Sec. 5, Blk. 30, Univ. Sur. Drlg. 1,960 ft.

Gulf Oil Corp. No. 5 M. B. McKnight, Sec. 1, Blk. 21-B, P.S.L. Sur. R.U.T.

Magnolia Pet. Co. No. 12 W. P. Edwards, Sec. 12, Blk. 23-B, P.S.L. Sur. R.U.R. 3,134 ft.

Magnolia Pet. Co. No. 1-18 University, Sec. 18, Blk. 30, Univ. Sur. Drlg. 2,855 ft.

Standard O. of Texas No. 1-4 University, Sec. 4, Blk. 30, Univ. Sur. Drlg. 3,786 ft.

Crockett County

Hanson & Anderson No. 1 W. T. Knoelke, Sec. 30. Blk. GG, H.E.&W.T. Sur. Spd. and S.D.

Humble No. 1 Ozona-Barnhart, Sec. 4, Blk. M-N, G.S.&F. Sur. Drlg. 3,004 ft.

Culberson County

Harry Niehaus No. 1 Caldwell, Blk. 109, Sec. 13, P.S.L. Sur. Drlg. 3,764 ft.

Quito Oil Co. No. 1 Cameron Lbr. Co., Sec. 24, Blk. 81, P.S.L. Sur. S.D.R. 945 ft.

Dawson County

Daw-Tex. Oil No. 1 J. E. Neely, Sec. 28, Blk. 35, T.&P. Sur. Prep. cmt. 7-in. 4,369 ft.; T.D. 4,450 ft.

Dickens County

Bond D. Jones No. 1 Ford et al, I.&G.N. Sur. W.O. csg. 3,508 ft.

Humble O. & R. Co. No. 1 Matador Ld. & Cattle Co., Sec. 26, Blk. 1, Shook & Arnold Sur.; 6,000-ft. test. Cg. 5,495 ft.

Ector County

R. R. Rhodes No. 1 J. L. Johnson, Sec. 43, Blk. 42, T.&P. Sur. Rng. 10-in. 225 ft.

Sinclair Prairie No. 1 Fay Holt, Sec. 1, Blk. A, P.S.L. Sur. Drlg. 2,983 ft.

El Paso County

Tri-State Oil Co. No. 1 Kinkel. S.D. 3,571 ft.

Gaines County

Osage Drlg. Co. No. 1 E. H. Jones, Sec. 20, Blk. 7-A, P.S.L. Sur. M.I.M.

Garza County

Gulf Oil Corp. No. 1 Swanson, Sec. 25, Blk. 2, H.&G.N. Sur. Flwd. 148 B.O. in 9 hrs.; P.B. depth of 7,400 ft.; P.B. 6,821 ft.; tstd. S.W.: P.B. 6,134 ft.; tstg.; drld. out to 6,857 ft.; fsg. bailer 6,857 ft.

Glasscock County

J. R. Petty No. 1 Joe Blake, Sec. 163, Blk. 29, W.&N.W. Sur. Drlg. 125 ft.

Hockley County

S. W. Richardson No. 1 A. E. Coe, Lbr. 53, Lge. 40, Maverick C.S.L. Sur. Cg. 4,972 ft.; cd. several zones of sat.

Howard County

T. G. Shaw, Tr., No. 1-B Wilkerson, Sec. 19, Blk. 34, T.&P. Sur. Drlg. 1,674 ft.

Hudspeth County

Haymon Krupp Oil & Ld. Co. No. 1 Thaxton, SE¼ Sec. 34, Blk. 74, Twp. 6. Drlg. 5,642 ft.

Haymon Krupp No. 1 Briggs, Sec. 24, Blk. 73, Twp. 7, T.&P. Sur. W.O.C. 5,365 ft.

Irion County

Clyde Crabb No. 1 W. M. Boelke, Tom Green C.S.L. Sur. Drlg. 1,050 ft.

J. W. Ellis No. 1 Sol Mayer, Sec. 240; Blk. 1, T.&P. Sur.; 2,100-ft. test. Drlg. 150 ft.

Lynn County

John L. Baldridge No. 1 Alma Lbr. Co., Sec. 151, H.E.&W.T. Sur. W.O.C. 4,450 ft.

Martin County

T. G. Shaw, Tr., No. 1 Wilkerson, Sec. 35-A, B.&C. Sur. S.D. 3,785 ft.

Pecos County

Geo. T. Abell No. 1 W. Williams, Sec. 11, Blk. 3, H.&T.C. Sur. Loc.

Ben Dansby No. 1 L. C. Lessenich, Sec. 45, Blk. 9, H.&G.N. Sur. Drlg. 40 ft.

J. L. Green No. 1 Iowa Realty Tr., Sec. 139, Blk. 10, H.&G.N. Sur. Drlg. 830 ft.

O. E. Schade No. 1 Neville, Sec. 72, Blk. 194. G.C.&S.C. Sur.; 2,500-ft. test. Drlg. 2,172 ft.

O. E. Schade No. 1 Otis Garrett, Sec. 59½, Blk. 8, H.&G.N. Sur. U.R. from 1,462 ft. to T.D. 1,438 ft.

Thomason Prod. Co. No. 1 Notions, Sec. 1, Blk. 105, W. P. Howard Sur. Drlg. 1,545 ft.

S. Thompson No. 1 Elsinore Cattle Co., Sec. 54, Blk. D, G.C.&S.F. Sur. Drlg. by whipstock 7,342 ft.

J. C. Trees No. 1 fee, Sec. 63, Blk. 8, H.&G.N. Sur. Drlg. 1,125 ft.

Reeves County

Artie Baker No. 1 J. W. Grider, Sec. 31, Blk. 58, P.S.L. Sur. Drlg. 448 ft.

Schleicher County

Lone Star Gas Co. No. 1 Bert Page, Sec. 30, Blk. L, G.H.&S.A. Sur. Drlg. 2,292 ft.

Lone Star Gasoline Co. No. 2 Bert Page, Sec. 46, Blk. L, G.H.&S.A. Sur. Drlg. 1,750 ft.

Scurry County

Coffield & Guthrie No. 1 First Natl. Bk., Snyder, Sec. 29, Blk. 97, H.&T.C. Sur. Drlg. 1,800 ft.

Forest Dev. Co. No. 1 J. J. Koonsman, Sec. 217, Blk. 2, H.&T.C. Sur. Drlg. 4,675 ft.; last report.

Tom Green County

Southern Cross No. 1 Upton & Upton, Sec. 20, Blk. A, A.B.&M. Sur. R.U.T.

Spinner No. 1 Reed, Mason Ferry Ranch Sur. W.O.C.; cave 4,948 ft.

Tom Green Oil Co. No. 1 Schreiber, A. Krending Sur. No. 1663. S.D. 1,000 ft.

Upton County

White & Wilson No. 1 Webb, Sec. 176, Blk. 1, C.C.S.D.&R.G.N.G. Sur. S.D.R. 715 ft.

Ward County

Robt. E. Mitchell No. 1 Allen, Sec. 7, Blk. 32, H.&T.C. Sur. P.B. 2,158 ft.; S.D.

Yoakum County

Honolulu Oil No. 10-695 R. Bennett, Sec. 695. W.O.C. 4,810 ft.

Osage Drlg. Co. No. 1 Miller, Sec. 898, Gibson Sur. Loc.

Shell Pet. Corp. No. 1 J. M. Rutts, Sec. 743. P.B. 5,229 ft.; tstg. 140 B.F. daily, 6% bs.&w.

Shell Pet. No. 1 Waples-Platter, Sec. 616. W.O.C. 285 ft.

T. & P. Oil Co. No. 1 A. M. Brownfield, Sec. 802. Drlg. 1,550 ft.

TEXAS PANHANDLE

Collingsworth County

C. H. Mee and C. F. Anderson No. 1 V. K. McCaskill, Sec. 18, Blk. 16, H.&G. N. Sur. Fsg. 1,650 ft.

Johnson No. 1 Taylor. S.D. 875 ft.

Deaf Smith County

Uscan No. 1 Farwell. S.D. 5,650 ft.

Donley County

Robinson No. 1 Kuteman, Sec. 88, Blk. 20, H.&G.N. Sur. Drlg. 4,272 ft.

Gray County

Products O. & G. Co. No. 1 Mason Davis, Sec. 23, Blk. 23-M, H.&G.N. Sur. Loc.

Trippiehorn No. 2 Webb, Sec. 12, Blk. A-9, H.&G.N. Sur. S.D. 2,265 ft.

Lipscomb County

Darrouzett Oil Co. No. 1 Pugh, 1½ mi. S and 1 mi. W of Darrouzett. S.D. 3,032 ft.

M. C. Tieman No. 1 Spandle, Sec. 626, Blk. 43, H.&T.C. Sur. S.D. 1,880 ft.

Potter County

Sinclair Prairie Oil Co. No. 1 Bush, Sec. 23, Blk. 6, B.S.&F. Sur., about 3 mi. N of Amarillo; 8,500-ft. test. S.D.R. 6,161 ft.

Roberts County

Whitlock No. 1 Cunningham. Drlg. 4,019 ft.

E. C. TEXAS WILDCATS

Cherokee County

C. C. Lanier No. 1 A. T. O'Neal, J. M. Procella Sur., 3 mi. E of Troup. Drlg. 1,000 ft.

Falls County

Marshall Hayes No. 1 M. Murphy, J. M.

Sanches Sur., 2 mi. NE of Lott. Prep. cmt. 5-in. 1,221 ft.

Grayson County

F. H. E. Oil No. 1 Graham, Chas. Quillen Sur., 1 mi. S of Collinsville. C.B. stk. 3,885 ft.
Jim McMurrey No. 1 Dr. T. J. Long, J. Garland Sur., 2 mi. S of Collinsville: 4,000-ft. test. S.D.O. 3,929 ft.

Henderson County

Tide Water-Seaboard-Humble No. 1 Sadie Starr McGee, R. Acosta Sur., 3½ mi. NE of Murchinson. Tstg. 8,090 ft. prep. comp. as gas-dist. well; tstg. 8,216 ft.; comp.; 436 bbls. dist. daily.

Houston County

Cook & Mayo No. 1 C. A. Walling, B. Parker Sur., 4 mi. N of Grapeland. T.D. 6,077 ft.; prep. to test.
Leggett & Gossett No. 1 B. F. Gardner, J. Thorn Sur., just N of Weldon. R.U.

Kaufman County

Sam Knoerr No. 1 J. B. Hunter, P Walker Sur., 5 mi. S of Terrell. S.D. 40 ft.
W. G. McGee No. 1 General American Life Ins. Co., John Baker Sur., 6 mi. W of Mabank. S.D. 3,104 ft.

Limestone County

H. Gant No. 1 Vol De Long, P. Varela Sur., 1½ mi. NW of Thelma. S.D. 2,924 ft.

McLennan County

C. E. Porter No. 1 B. D. Burchett, De la Vega Sur., just SE Waco. S.D. 695 ft.

Navarro County

Guy Sitton No. 1 J. P. Fortson, T. J. Chambers Sur., 4 mi. E of Alma. S.D. 628 ft.

Rains County

McKinley & Hastings No. 1 McTaggert, B. Milder Sur., 1 mi. W of Emory. S.D. 30 ft.

Red River County

Bentley-Sheppard & Stevens No. 1 So. Pine Lbr. Co., G. S. Parks Sur., 17 mi. N of Clarksville. S.D. 71 ft.

Smith County

J. H. Thomason No. 1 J. W. Bartlett, R. H. Stewart Sur., ¼ mi. SE of Jamestown. Wshg. to bttm. 1,879 ft.

Trinity County

C. D. Davis No. 1 J. D. Gibson, A. Donavan Sur., 4 mi. NE of Trinity. Gas blowout 148 ft.; S.D. 2,627 ft.

Upshur County

R. E. L. Johnson No. 1 Lizzie Parker, John B. Gay Sur. S.D. 2,930 ft.

Van Zandt County

F. A. Richardson No. 1-A B. C. Dodd, T. W. Hutchinson Sur., 2 mi. S of Grand Saline. S.D. 1,925 ft.

Wood County

Geo. Strake No. 1 Farrier, J. Walker Sur., 4 mi. E of Yantis. Loc.

NORTH TEXAS WILDCATS

Archer County

Birdwell Oil Co. No. 31-B Oil Inv. Co., Lot 2, John Richards Sur., 5 mi. NW of Archer City; 4,200-ft. test. Drlg. 3,760 ft.
W. B. Omohundro No. 1 T. B. Wilson, Sec. 5, H.&T.C. Sur. Drlg. 4,404 ft.
Phillips Pet. Co. No. 1 J. B. Miller, Sec. 20, A.T.N.C.L. Sur. T.D. 4,006 ft.; O. W.D.D.; S.O. to D.D. to 4,500 ft.; C.O. 3,800 ft.
Westmount Oil Co. No. 7 T. J. Dempsey, Sec. 10, D.C.S.L. Sur., O.W.D.D. Perf. csg. 4,139-44 ft.; S.D.O.

Baylor County

British Am. O. P. Co. No. 1 J. E. Cope, Sec. 220, T.&N.O. Sur. Drlg. 1,895 ft.

Clay County

L. T. Burns No. 1 Browning, Sec. 94. Belcher subd.; 5,000-ft. tst. Drlg. 3,392 ft.

Cooke County

Sinclair Prairie No. 3 J. M. Best, T. Toby Sur. A-1054. 6⅝-in. csg. 4,925 ft.; drlg. 4,947 ft.; O.S.

Foard County

Fleetwood & Kaufman No. 1 Prowers, H.&T.C. Sur., Blk. A. S.D.O. 5,005 ft.

Jack County

Pitzer & West No. 1 F. Warren, Sec. 2784, T.E.&L. Sur. Drlg. 3,020 ft.

Montague County

Benton & Holmes No. 1 J. Bowers, Sec. 55, M.E.P.&P. Sur. S.S.O. 2,887-95 ft.; 6⅝-in. 2,883 ft.; tstg. est. 500 to 600 bbls. per day.

Wichita County

F. S. Freeland No. 1 J. D. Cooper, H. Hastie A-92; 4,000-ft. test. Spd. and S.D.

Wise County

H. Jackson No. 1 F. Neeley, Blk. 29, Matagorda Co. Sch. Ld. Spd. and S.D.
H. M. Muse No. 1 F. F. Kaker, Blk. 16, Matagorda Co. Sch. Lds. Pits.

Wilbarger County

Lawson & Leavell No. 16 W. T. Waggoner A, Sec. 109, H.&T.C. Sur., Blk. 14. Matl. 3,500-ft. test. Spd. and S.D.
Humble O. & R. Co. No. 1 T. J. Milner, Sec. 31, H.&T.C. Sur., Blk. 9; 3,000-ft. rotary test; S.S.O. 1,096-1,106 ft.; drlg. 2,990 ft.

Young County

Brader & Groves No. 1 J. L. Clark, Sec. 2, E.L.&R.R. Sur. 6¾-in. 3,850 ft.; O.S. 3,850-60 ft.; est. 200 bbls.; tstg.
H. M. Leidecker No. 1 J. M. Nail, Sec. 1997, T.E.&L. Sur. S.D. 1,515 ft.
Long & Lupton No. 1 A. Crouch, I.&G. N. Sur. A-1460. 6⅝-in. 3,865 ft.; sat. L. 3,940-44 ft.; treating with acid; test wtr.; S.D.O.
Magnus & McLester No. 1 B. B. Teague, E. S. Colthrop Sur. A-1390. 6⅝-in. 3,786 ft.; G.L. 3,780-3,825 ft.; treating with 6,000 gal. acd.; est. 200 bbls.; S.D.O.; est 10 B.P.D.; may D.D.

WEST CENTRAL TEXAS DISTRICT

Brown County

A. D. Bruce No. 1 L. J. Mauldin, Sec. 15, H.&T.C. Sur. Sp.&S.D.
E. C. Norman No. 1 Stella Rice, Chas. Messenger Sur. No. 127. S.D.R. 981 ft.

Callahan County

Dobbs Oil Co. No. 1 Finley, Sec. 75, Bayland Orphans Home Ld. Fsg. 1,785 ft.
J. C. Jackson and Doug. Tomlingson, Jr., No. 1 T. J. Thompson, Sec. 30, B.B.B. &C. Sur. Drlg. 1,853 ft.
Roeser & Pendleton No. 1 Chas. Yost, Sec. 18, Blk. 8, S.P. Sur. Drlg. 4,672 ft.

Coleman County

Arcadia Ref. Co. No. 1 W. R. Roberts D. J. Holt Sur. Drlg. 3,185 ft.
Oscar Howe No. 1 De Busk, Isaac Harris Sur. No. 164. S.D. 195 ft.
E. E. Kirkpatrick No. 1 F. Nixon, Burnett, C.S.L. Sur. Rng. csg. 3,785 ft.

Comanche County

Comanche O. & G. Co. No. 1 J. E. McGuire, C. Rockefeller Sur. No. 3. Fsg. 2,900 ft.
E. T. DeArman No. 1 Moorman, Sec. 37, D.&D.A. Sur. Drlg. 2,385 ft.
O. L. Johnson No. 1 Mrs. W. Jones, Sec. 34, H.&T.C. Sur., Abst. 1610. S.D.O. 2,835 ft.

Eastland County

Dobbs Oil Co. No. 1 Greer, J. E. Hardy Sur., Ellenburger test. Drlg. 1,934 ft.
Vin Gamblen No. 1 G. C. Daniels, Sec. 2, B.B.B.&C. Sur. S.D.O. 448 ft.
Kleiner & Warren No. 1 Harbin, Sec. 1, Blk. 6, E.T.R.R. Sur. Drlg. 1,300 ft.

Erath County

Wayne Chandler No. 1 Chandler. J. W. Moore Sur., Abst. 571. S.D. 3,985 ft.
Collard No. 1 W. L. Payton, H. Pierson Sur. No. 1, Abst. 1105. S.D. 185 ft.

Fisher County

J. D. Baker No. 1 O. R. Burnham, Sec. 4, Blk. R, W. D. Richardson Sur. S.D. O. 3,214 ft.
General Crude No. 1 M. M. Flores, Sec 212, Blk. 1, B.B.B.&C. Sur. D.&A. 3,540 ft.

Hamilton County

Wallace & Vickers No. 1 C. C. Lund, J. P. Bailey Sur. 51. S.D.O. 2,370 ft.

Haskell County

Sawyer Drlg. Co. No. 1 A. J. Rowland Est., Sec. 5, Blk. 3, H.&T.C. Sur., 15 mi. E of Stamford. Fsg. swb. 5,120 ft.

Hood County

Prince & Miller No. 1 J. H. Andrews, NW cor. of Geo. Sutherland Sur. Drlg. 600 ft.

Jones County

Brown Eagle No. 1 Waterson, Andrews Sur. No. 191. T.D. 2,283 ft.; S.D.
R. B. Carrol No. 1 G. Herndon, Goliad C.S.L. Sur. Drlg. 1,600 ft.
Ed. L. Evans No. 1 B. J. Crier, Sec. 8, B.A.L. Sur. Rng. 8-in. 1,355 ft.
G. M. Gillispie No. 1, Sec. 54, O.A.L. Sur. Drlg. 100 ft.
Grover, Rose & Farrell No. 1 O. D. Swanson, Sec. 193, B.B.B.&C. Sur., 2 mi. NE of Avoca. S.D. 3,271 ft.
J. H. Sproules No. 1 James Nichols, Sec. 47, Blk. 16, T.&P. Sur. S.D. 1,783 ft.

Nolan County

Chas. E. Peddicord No. 1 Tipton, Sec. 43, Blk. 19, T.&P. Sur. Drlg. 2,925 ft.
Union Oil Co. No. 1 J. D. Pepper, Sec. 51, Blk. 21, T.&P. Sur.; 5,000-ft. test. 6 mi. SW Sweetwater. Drlg. 5,020 ft.

Palo Pinto County

W. K. Gordon No. 1 J. W. Conway, Ruldosa I.R.R. Sur. R.U.C.T.

Parker County

Brown-Gardner Bros. No. 1 Gilbert, T.& P. Sur., Abst. 1958. S.D. 2,200 ft.

Shackelford County

Joe DeGrazier No. 1 Harbough, E cen. part of county, Sec. 1563, T.E.&L. Sur. 4,500-ft. test. S.D. 3,894 ft.
W. J. Dettenhaim No. 1 Mrs. F. J. Lynch, Sec. 24, B.A.L. Sur. Drlg. 215 ft.
Fox & Rudd No. 1 Shotwell, Sec. 59, B.A.L. Sur. Fsg. 1,632 ft.
R. H. Gordon and Frank Pethybridge No. 1 C. B. Snyder, 330 ft. fr. N and E lines, Sec. 38, L.A.L. Sur.; 4,500-ft. test. Est. 20 to 50 B.O.P.D.; T.D. 3,660 ft.; S.D. 4,293 ft.
W. Waddington No. 1 Cottle, Sec. 42, Univ. Sur. Sp. and S.D.
J. West et al No. 1 J. H. Kinder, Sec. 40, B.A.L. Sur. D.&A. 940 ft.

Taylor County

Forest Dev. Co. No. 1 Anderson, Sec. 8, L.A.L. Sur. T.D. 3,546 ft.; prep. P.B.; to test.
Rowan & Nichols No. 1 W. W. Martin, Sec. 29, J. M. Saucedo Sur. D.&A. 2,410 ft.

Canadian Fields

(Continued from Page 106)

Section 4-1-39w3, is cleaning out preparatory to deepening from 300 feet. Both wells are close to the Alberta boundary.

In the Simpson area, eastern Saskatchewan, Simpson Oil Co. No. 2, LSD 2, Section 11-29-25w2, is cleaning out to 2,512 feet, and will deepen to a potential oil horizon around 3,500 feet.

On the Vera structure, west-central Saskatchewan, Vera Oil fields No. 2, LSD 5, Section 23-41-24w3, is shut down for the winter at 2,185 feet, after having had a fair showing of green crude.

In the Lloydminster field, Lloydminster Royalties No. 1, LSD 4, Section 36-49-1w4, will lower casing to bottom, cement over the producing horizon and drill to production through the plug, to overcome difficulties in finishing the well, which is expected to develop around 250 bbls. a day of 18-gravity crude, from a sand at 1,925 feet. The well was started for a 4,600-foot test, and the shallow production was unexpected. It is planned to install a gas pressure pump working from the well bottom, using 100-pound pressure of natural gas from the field, to lift the oil. Arrangements are being made for refinery facilities in the field when the potential production is brought up to 500 bbls. a day. The company has concluded contracts for six tests to be drilled by other companies on its acreage, the first to start about March 15.

Alberta Depreciation Allowance

Recent rulings have been made by the Alberta income tax department on depreciation allowances on oil and gas equipment deductible from provincial income tax. Rotary drill pipe is allowed a depreciation rate of 30 per cent on the first well, 20 per cent on the second, and 15 per cent each on the third and fourth; and rotary drilling equipment, other than drill pipe, may be deducted 15 per cent for each well.

Drilling in Ontario

In the Tilbury field, Kent County, Ontario, Union Gas Co. No. 310, Lot 161, North Talbot Road, Raleigh Township, finished at 1,432 feet with a shot production around 200,000 cu. ft. of gas per day.

In the Dawn field, Lambton County, Union Gas Co. No. 98, Lot 20, Concession 1, Dawn Township, finished a dry hole around 2,035 feet.

Rocky Mountain Fields

(Continued from Page 99)

the Sunburst at 2,833 feet and had approximately 500,000 cu. ft. of gas in that horizon at 2,833-77 feet. The 7-inch was cemented at 2,837 feet and the drill continued in that sand to 3,842 feet where it tested 20 bbls. of oil per day naturally with approximately 250,000 cu. ft. of gas. It then resumed drilling. No. 1 Lander was completed early in 1936 in the Sunburst, where it had only a show of oil, after plugging back from the Cut Bank. The showing was shot, making it the first producer in the field in that sand and the largest well. It made as high as 2,000 bbls. per day at first and three years later was still making 600 bbls. per day. Its No. 6 Tribal, an east offset, had only sandy shale in the Sunburst horizon and was completed as an average well in the Cut Bank. No. 2 Lander, on the southwest, made 325 bbls. per day on the pump from the Sunburst. Texas Co. No. 2 Tweedy, half a mile to the southwest of the big well, flowed 500 bbls. in two days through the casing. A dry hole was drilled on the west and a north offset was a small well.

Cut Bank had no completions or new operations.

Glacier Prod. Co. No. 2 Scheuren, C SW SW Sec. 20-33n-5w. Spdg. 100 ft. in new hole.
Glacier Prod. Co. No. 5 State, C NW NW Sec. 16-35n-5w. Drlg. 1,515 ft.
Glacier Prod. Co. No. 3 O'Brien, C SW SW Sec. 32-34n-5w. Drlg. 2,650 ft.
Santa Rita O. & G. Co. No. 3 Lander, C S½ SE Sec. 16-35n-6w. Drlg. 2,895 ft.

Judith Basin County

Fletcher E. Hunt No. 1 Doven, SE NE NW Sec. 30-14n-15e. Spd. and S.D.

Park County

Ben Ryan et al No. 1 Burgess, SE SW NW Sec. 28-2s-11e. Drlg. 1,550 ft.

Petroleum County

H. Clark Rowland No. 1 Brundidge-Mink, SE NW Sec. 35-14n-25e. S.D. 110 ft.
Watson Oil Co. No. 1 Austed, SW NW SE Sec. 22-13n-28e. T.D. 1,160 ft.; U.R. 10-in. to bttm.
O. B. Canfield No. 2 Govt., SE NE NE Sec. 21-17-24e. S.D. 780 ft.

Richland County

W. M. Fulton No. 1 Richardson, SW SW SE Sec. 29-26n-52e. Drlg. 540 ft.; small S.W. at 435 ft.

Teton County

Zodiac Oil Co.-Gulf States Oil Co. No. 1 Kellogg, NE NW NE Sec. 33-28n-5w. Drlg. 2,120 ft.
Gulf States Oil-Zodiac Oil Co. No. 1 Coffee-Wallenstein, SW SW SW Sec. 5-27-5w. S.D. 2,525 ft. until spring.

Toole County

Kevin-Sunburst had two completions and one new operation. Prevel & Shea No. 1 Government, CSL NW SW Section 11-35n-3w, in the Gunderson pool, which was dry in the Ellis-Madison contact at 1,786-1,805 feet after acidizing with 500 gallons, was deepened to 1,813 feet and is pumping 75 bbls. per day naturally of 32-gravity oil. It had the Sunburst at 1,552-62 feet.

Superior Petroleum Co. No. 11 Government, CEL NW SW Section 12-35n-3w, is swabbing 15 bbls. per day before acidizing from the contact at 1,509-24 feet.

G. M. Plotke No. 2 Ward, SW cor. Sec. 28-35n-3w. Drlg. 310 ft.; (first report).
Coolidge & Coolidge No. 3-A State, NW NE NW Sec. 36-36n-2w. Drlg. 480 ft.
G. & A. Oil Co. No. 12 Goeddertz, SE NE SW Sec. 23-35n-3w. T.D. 1,680 ft.; contact 1,668 ft.; good S.O.; will acd.
C. K. Morton No. 1 Osthoff, SW SW SE Sec. 1-35n-3w. S.D. 1,556 ft.
Kippen O. & G. Co. No. 1 Thompson, C NE SE Sec. 28-34n-1e. Spdg.
Sid Porter No. 1 Bradley, SE cor. Sec. 3-34n-2w. Drlg. 1,400 ft.
C. L. Smith, Agt., No. 1 Govt., SW SE NW Sec. 13-35n-2w. S.D. 1,045 ft.
Aspen O. & R. Co. No. 1 Govt., C NE SE Sec. 25-36n-3w. S.D. 2,050 ft.
Chas. Grant et al No. 1 Anderson, SE NE NE Sec. 26-35n-4w. S.D. 2,109 ft.

Yellowstone County

Riverton Oil Co. No. 1 Fox, CEL NW NE Sec. 14-2n-23e. T.D. 1,990 ft.; rng. 6⅝-in.

UTAH

Cane Creek Oil Co. No. 1 Govt., NW SW Sec. 31-26n-21e. Drlg. 2,538 ft.; out of salt at 2,530 ft.; S.O.&G.
Crescent Eagle Oil Co. No. 1 Brendel, SW SE Sec. 4-22s-19e. Drlg. 4,110 ft.

Summit County

Longwell Pet. Co. No. 1, SE SW SE Sec. 35-3n-5e. T.D. 2,876 ft.; sdtrkg.

Personal Paragraphs

L. B. JACKSON, Tulsa oil man and president of the International Petroleum Exposition in its early days, was taken to the Morningside Hospital in that city last week. He was reported to be suffering from a heart ailment.

J. HOWARD PEW, Philadelphia, Pa., president of the Sun Oil Co. and director of the American Petroleum Institute, was the speaker at the annual luncheon of the Dallas Salesmanship Club at the Hotel Adolphus, Dallas, Tex., last Thursday. He was honor guest at a breakfast given by the club in the Baker Hotel Thursday morning. JOHN G. PEW is assistant manager of the Sun's Dallas office.

JACK LANDER, Pure Oil Co. scout, has been transferred from Wichita, Kans., to St. Joseph, Mo., to cover activities in the Forest City basin.

JAMES H. GAVIN, for 17 years engaged in the retail fuel oil distributing business in Chicago, has reestablished the Gavin Oil Co. in that city for the marketing of a complete line of petroleum products.

GEORGE BUCHANAN, vice president, and F. W. FREEBORN, JR., general superintendent, of the Adams Oil & Gas Co., Houston, Tex., have finished a tour of inspection of the company's Illinois oil properties.

HENRY WITTMER of Fort Worth, Tex., independent oil operator, and Mrs. Wittmer were in New York last week. There they joined the former's father and mother, of Pittsburgh, Pa., for a cruise aboard the New Amsterdam around South America.

HARRY FOTIADES, independent oil operator of New Orleans, La., has sold his oil properties, now making 2,500 bbls. a day, to the Lisbon-Iberia Oil Corp. for a consideration reported to be approximately $1,000,000. The wells are in Iberia Parish of southern Louisiana.

LLOYD BAYLY, connected with General Petroleum Corp. in various executive capacities during the past 14 years, has been appointed sales manager of the company's southern division. During the past two years he has served the home office in Los Angeles in the advertising, sales promotion and sales departments, having been transferred from Seattle to Los Angeles in 1937.

O. P. COTTRELL, of the technical division in the Texas Co.'s refining department, New York, spoke before the Rotary Club in Tulsa last week on "The Past, Present and Future of Refining." "This is not only an oil age," said Mr. Cottrell, "but it rapidly is developing into a chemical age, and industry is determined to expand this business of ours."

WILBUR HARRISON, vice president of the Apex Petroleum Corp., was elected president of the California Stripper Well Association; RICHARD FENTON, former assistant to the vice president of the Oil Producers Agency of California, executive vice president; NEAL ELDER and A. D. MITCHELL, vice presidents; ROBERT I. PLOMERT, A. N. Macrate interests, secretary-treasurer.

R. H. B. KER, of Victoria, British Columbia, has been elected president of Home Oils, Ltd., succeeding COL. NELSON SPENCER, who becomes chairman of the board. MAJ. JAMES R. LOWERY was named managing director. Other officers are: Vice president, GEN. VICTOR ODLUM; secretary-treasurer, GEORGE F. V. HUDSON.

W. H. MORGAN was chosen president of the Independent Refiners Association of California at the annual meeting in Los Angeles last week. DeWITT KNOX was elected first vice president; R. E. HINES, second vice president, and MRS. A. M. LOCKHART secretary-treasurer. The board of directors consists of W. H. MORGAN, DeWITT KNOX, R. E. HINES, MRS. A. M. LOCKHART, W. C. ALLISON, J. H. LEWIS and C. B. LIMBOCKER. The association is composed of 26 independent refiners.

E. R. SLOAN resigned as a member of the Kansas Corporation Commission last Thursday, the resignation to be effective February 15. Mr. Sloan explained to GOV. PAYNE H. RATNER that his law practice "requires immediate attention." He was appointed two years ago and for several months had served as chairman. His resignation makes the second vacancy on the three-member commission, that created by the withdrawal of HOMER HOCH to become an associate justice of the Supreme Court having not yet been filled.

Do You Remember?

From The Oil and Gas Journal Files

25 YEARS AGO

The discovery of a deeper and very prolific sand in the Cushing field in Oklahoma placed that pool in the prospective major class. A 3,000-bbl. well in the Bartlesville horizon was completed in the past week.

Wildcatters are drilling in nonproducing Seminole County, Oklahoma, seeking a pay expected around 1,600 feet. An oil well was completed at Wewoka years ago, but depression prices caused its owners to abandon it.

Deeper drilling is the slogan in the Gulf Coast district and J. M. Guffey Petroleum Co. is prepared to go to 3,500 feet in a test if it can acquire acreage enough to warrant the big expenditure.

20 YEARS AGO

The Baku oil fields in eastern Russia have been greatly improved since British capital and engineering skill was introduced.

Dr. Fred Cook, who claimed he discovered the North Pole ahead of Admiral Peary, has arrived in Fort Worth, Tex., and says he is going into the oil business.

10 YEARS AGO

A Sunday shutdown movement inaugurated by the Barnsdall and Prairie companies in the Seminole and Burbank fields in an effort to curtail production meets with the approval of T. B. Slick and Tidal Oil Co. who will join with the others. It is hoped the movement will become general in the Mid-Continent.

James W. Swayne, pioneer operator in the Gulf Coast field as a member of the Hogg-Swayne Syndicate, dies in Fort Worth, Tex., at the age of 73 years.

William S. Pillow, 48, vice president of the Humble Pipe Line Co., dies in Houston, Tex.

EVERETT L. BRADLEY, geologist of Wichita, Kans., has been named a vice president of the Mid-Continent Royalty Owners Association.

A. C. HEARN, of London, has relinquished his post as a managing director of Anglo-Iranian Oil Co. and his position on the board of directors.

ARCH W. LEONARD, president of the Devonian Oil Co., Tulsa, is in Morningside Hospital, that city, having been stricken by a heart attack. His condition was reported serious.

TED STAUFFER of Beaumont, Tex., has been transferred by the Sun Oil Co. to Evansville, Ind., as assistant to the manager. He was formerly in the torsion balance department at Beaumont.

H. A. STEWART, superintendent of the Rocky Mountain division of the Texas Co., was in Montana last week, inspecting company properties. He said the company planned to drill 11 wells in the Cut Bank field this year, all to meet lease requirements.

W. C. McKNIGHT, who sold his producing properties in the Kevin-Sunburst field, Montana, to the Big West Oil Co., is now settled with his family in the beautiful home to which he has retired on a high point overlooking Kalispell, Mont. Friends of Mr. McKnight who have visited him say nothing that contributes to the convenience of a modern residence has been overlooked. His chief pride is his den, where he has installed a rare collection of Navajo rugs. Long plate-glass windows on one side afford a view of the main range of the Rocky Mountains.

JOHN H. KANE, Bartlesville, Okla., former executive vice president of the Phillips Petroleum Co. and Mrs. Kane left last Sunday for a six-week Mediterranean cruise.

DR. FREDERICK WALLER, president of Pan Pacific Oil Co., has returned to his Los Angeles office after a trip to Japan, China, and the Philippine Islands.

J. E. NELSON, for years treasurer of the Gulf Oil Corp., has been elected vice president. W. V. HARTMANN, vice president, has been made a director.

MILTON COX has resigned as manager of the gas department of the Henderson Co., Amarillo, Tex., to take up his new duties as manager and secretary of the Tri-State fair in Amarillo.

DORSEY E. STRAITIFF was elected president and general manager of the Rocky Mountain Drilling Co. at the annual meeting of stockholders and directors in Casper, Wyo. W. W. CLINE and HARRY T. STRAITIFF were elected vice presidents; GEORGE B. SHIELDS, secretary-treasurer, and PRYDE W. BOGGS assistant secretary-treasurer.

DANA H. KELSEY, vice president of the Sinclair Prairie Oil Co., Tulsa, left for Harlingen, Tex., early this week to help celebrate the hundred and first birthday of his father, JOHN B. KELSEY, February 14. The father has voted for every Republican president of the United States, including Abraham Lincoln. For years John Kelsey represented the land department of the Prairie Oil & Gas Co. in Chickasha, Okla., and is well known among old-time oil men. His chief diversion is to drive his own car down town when he goes for his daily cigar.

Keeps Him Fairly Busy

When it is considered that Elmer F. Schmidt, vice president and operating manager of the Lone Star Gas Company, Dallas, Tex., has executive supervision of 4,000 miles of transmission pipe line and its 20 compressor stations, besides operations in 51 gas fields, embracing more than 1,000 wells in Texas and Oklahoma, no extended argument is necessary to show he has a job which keeps him fairly busy. When he joined the company in 1918 Mr. Schmidt was put in charge of the gas measurement department. The next year he was advanced to chief engineer, and in 1920 he was made general superintendent. He was elevated to the board of directors in 1935 and then was chosen vice president, with his present responsibilities.

ELMER F. SCHMIDT

Mr. Schmidt, born in Binghampton, N. Y., in 1889, graduated from Cornell University, receiving his civil engineering degree, in 1912. His first natural gas work was with the Ohio Fuel Supply Company, in Charleston, W. Va. The next year he went to the Northwestern Ohio Natural Gas Company, Toledo, Ohio, and soon afterward to the Fayette County Gas Company, Uniontown, Pa. In 1915 he returned to the Ohio Fuel Supply Company, where he was an important figure in developing the science of accurate high-pressure natural gas measurement. Mr. Schmidt is active in technical organizations, and he is vice chairman of the Natural Gas Section of the American Gas Association.

E. G. NEWTON, of El Dorado, Ark., heads the new local offices established by George Neirer, Inc., drilling company of Houston, Tex.

FOREST E. WIMBISH, geologist for the Magnolia Petroleum Co. in the Illinois fields, has been sent back to the Wichita, Kans., office, where he formerly was stationed.

CHARLES L. HOWELL, of Austin, was chosen legislative contact member of the Texas Association of Petroleum Retailers committee on taxation and legislation at the association's annual convention in Houston. R. E. CALVERT, of Houston, is chairman of the committee.

JOHN F. O'DONOHUE, president of Petroleum Producers Co., has been elected president of the North Texas Oil and Gas Association by the board of directors who met in Wichita Falls last week. He succeeds P. F. GWYNNE. J. H. S. BONNER president of Bonner Oil Co., was chosen vice president; JOHN W. THOMAS, president and general manager of the Deep Oil Development Co., second vice president and D. G. (DAVE) GRAY was renamed executive vice president.

FRED W. BATES has resigned as geologist for the Continental Oil Co. in Lafayette, La., to engage in consulting geologic and micropaleontologic work in the Gulf Coast of Louisiana. Mr. Bates was geologist for S. W. Richardson and associated interests on their discovery well at Eola, new Wilcox field recently opened in Avoyelles Parish, Louisiana. He was associated with the Amerada Petroleum Corp. in the drilling of the discovery well at Cheneyville and was geologist and paleontologist for Continental during the drilling of the discovery and subsequent wells at Ville Platte.

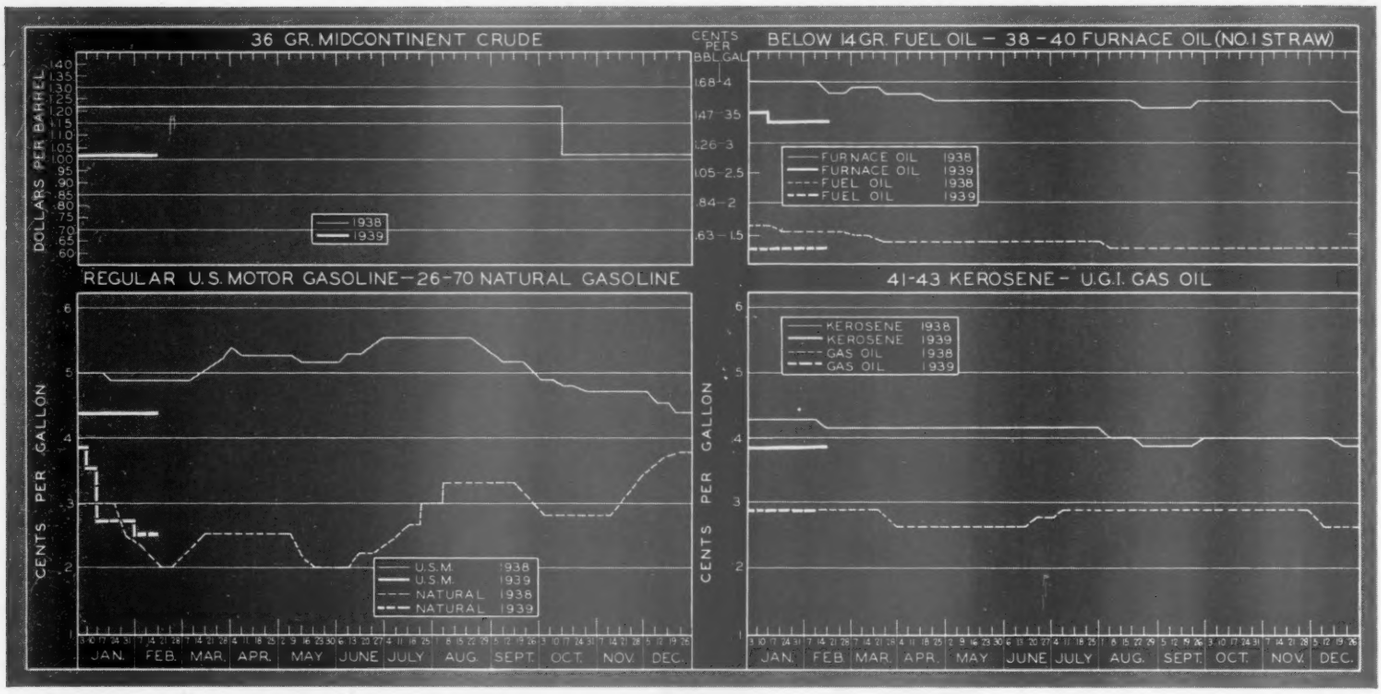
SHIFTS: H. L. GRILEY, geologist Sun Oil Co., from Bloomfield, Ind., to St. Joseph, Mo.; L. E. BOTKIN, superintendent Illinois Oil Co., from Big Spring, Tex., to Kermit, Tex.; W. H. PATTISON, geologist Bishop Oil Co., from Corpus Christi, Tex., to Mattoon, Ill.; J. C. TREES, director Benedum-Trees Oil Co., from San Antonio, Tex., to Miami, Fla.; J. J. McCLELLAND, manager Ohio Oil Co., from Shreveport, La., to Owensboro, Ky.; F. B. WINBERY, superintendent United Gas Pipe Line Co., from Monroe, La., to Iowa, La.; R. R. MUNOZ, president Terrace Oil Co., Inc., from Mattoon, Ill., to Evansville, Ind.; HARRY E. LAYMAN, scout Deep Rock Oil Corp., from Mattoon, Ill., to Stillwater, Okla.; T. R. RUSSELL, general superintendent McClanahan-Leonard Pipe Line Co., from Mount Pleasant, Mich., to Kalamazoo, Mich.; GEORGE L. ROBINSON, engineer Buckeye Pipe Line Co., from Lima, Ohio, to Huntington, Ind.; FORREST W. HOOD, geologist Ohio Oil Co., from Enid, Okla., to Tulsa; J. D. LANDER, scout Pure Oil Co., from Wichita, Kans., to St. Joseph, Mo.; ROBERT L. SHICK, engineer Stanolind Oil & Gas Co., from Ellinwood, Kans., to Stafford, Kans.; M. R. JOY, superintendent Cities Service Oil Co., Madison, Kans., to Mount Pleasant, Mich.

CHARLES ORR, Holdenville, has been picked by GOVERNOR PHILLIPS as attorney for the Oklahoma unit of the Interstate Compact Commission. Mr. Orr received his law degree at the University of Oklahoma, was a captain of infantry in the World War and saw six months' service overseas.

BURDETTE BLUE, president of the Indian Territory Illuminating Oil Co., Bartlesville, Okla., was appointed chairman of the Independent Petroleum Association of America's committee on petroleum research. FRANK M. PORTER, vice president of Wirt Franklin Petroleum Corp., is vice chairman. Other members are R. C. JOPLING, vice president Phillips Petroleum Co., Bartlesville ; HARRY LEONARD, of Harry Leonard, Inc., Roswell, N. M.; R. J. DAUGHERTY, Empire companies, Bartlesville; T. C. JOHNSON, Wichita, Kans.; CHARLES A. WARNER, Houston Oil Co. of Texas, Houston; C. A. JOHNSON, president Holly Oil Co., Los Angeles, Calif.; J. S. NOLAND, Barnsdall Oil Co., Tulsa; FRANK LONG, vice president, Oklahoma Natural Gas Co., Tulsa; JAKE L. HAMON, Cox & Hamon, Dallas, Tex.; JOHN W. NAYLOR, Fort Worth Star-Telegram, Fort Worth, Tex.

SVERRE PETERSEN has retired from the Shell Petroleum Corp., St. Louis, Mo., after 20 years' service as engineer and refinery expert. Born in Bergen, Norway, Mr. Petersen graduated from the Technical College of Bergen. Coming to this country, he worked in the engineering departments of various companies. He joined Shell in 1918, when the company had only one refinery. Later he directed important engineering work involved in expanding the one refinery, at Wood River, Ill., and in designing plants at East Chicago, Arkansas City, Houston, and Norco.

K. L. SAPPINGTON, for the past eight years division manager of Shell Petroleum Co.'s production department in Midland, Tex., will resign March 1 to enter the oil business for himself. Mr. Sappington was driller on Shell's first test in West Texas, a dry hole near San Angelo, in 1926. He also drilled in the company's first producer in West Texas, in the Powell field. He has been with Shell 13 years. He was one of the organizers of the Permian Basin chapter of the American Petroleum Institute. C. R. RORIPAUGH, now division mechanical engineer in Midland, will succeed Mr. Sappington.



Representative Mid-Continent Quotations on Crude Oil and Refined Products, Basis Oklahoma (Group 3)

Group 3 Gasoline Market Firmer, but Light Fuel Oils in Need of Help

By T. F. SMILEY

Group 3 refiners found reason for encouragement in the gasoline market this week. Notwithstanding the disconcerting rise in the country's total stocks, Oklahoma prices were definitely firmer. So were bright stocks and neutrals, as burdensome inventories at last showed substantial shrinkage. The heating oils still were looking for help. Natural gasoline was headed downward.

Third-grade gasoline, which a few weeks ago was something to get rid of as quickly as possible, was reported actually scarce. One reason for it lies in the fact that a large proportion of the refineries which have shut down recently made low-octane gasoline almost exclusively. Some of the large refiners have discontinued manufacturing this grade. Demand from agricultural regions has been heavier than expected.

Keeping Out of Market

But the better market tone was not confined to low-octane material. A growing number of large companies have been keeping out of the spot gasoline market, rebelling against the absurdly low tankcar prices. This has helped to clean up stocks that were in rather weak hands.

Mounting stocks continue to be a focal point of uneasiness in the gasoline market. Although these stocks in the United States are some 7,600,000 bbls. less than they were a year ago, they need to be lower than that to be in balance with probable requirements. In January and February of 1938 refiners were planting the seeds of trouble by piling up inventories to fantastic heights. That they have not learned the lesson written in red ink last year is indicated by the fact that additions to stocks in recent weeks have been running a close race with the additions made in the corresponding period of 1938. In the week ending February 4, 1939, additions to stocks exceeded those in the comparable week of last year, being 1,870,000 bbls. against 1,775,000.

In casting about for an explanation of the refining industry's apparent failure to observe the red light some observers express the opinion that because 1936 was a better gasoline year than 1935, and 1937 a better one than 1936, it was assumed the secret of perpetual motion had been discovered. There no longer was any need to be concerned about rising stocks. The only question was how to be prepared for the big gains in demand which the gold-tinted future held. So the industry went into the spring season of 1938 with 92,312,000 bbls. of gasoline in its storage tanks. When the gong sounded on tourist business in September it had decreased its accumulation some 22,000,000 only. That is, it had as much gasoline left at the close of the heavy consuming season as it had needed at the beginning.

Refined Oil Market Barometer

Heating oil inventories, for weeks a source of worry in Mid-Continent, beginning to cause concern in other areas. Big weekly additions to gasoline stocks now viewed as likely to form serious handicap when season of heavy consumption opens; market generally weak. Position of lubricants improving as stocks shrink. Natural gasoline softer, with prices off in Texas.

MID-CONTINENT. Gasoline steadier. Furnace oils unsettled. Natural gasoline soft.

EAST COAST. Light fuels off, result growing stocks and low tanker rates. Gasoline soft.

GULF COAST. Fuel oils soft. Gasoline weak. General market sluggish.

PENNSYLVANIA. Bright stocks and neutrals stronger. Motor fuels easy.

CALIFORNIA. Natural gasoline stronger. Burning oil in good demand.

CHICAGO. Heating oils helped a little by cold wave. Gasoline irregular.

Cold Wave Raises False Hopes

It looked as though the heating oils might be pulled out of their difficulties last week, when heavy snows and stinging temperatures swept regions supplied by Oklahoma refiners. Hurried orders from consuming areas made drafts on swollen inventories, and prices began to stiffen. But like others which had preceded it, the cold wave lacked staying quality, and hopes were dashed. In no other territory east of California are the light fuels giving so much concern as in the Mid-Continent. In the Mid-Continent region gas and fuel oil stocks in the week ended February 4, 1939, were 4,293,000 bbls., compared with 3,483,000 bbls. in 1938, an increase of 23.3 per cent. Decreases were the rule in other areas.

Natural gasoline had an uneasy week. As a result of a mild pickup in jobber buying Oklahoma prices held, but those in Texas dropped an eighth-cent. Urgent offerings from Oklahoma plants that must ship daily were fewer.

The lubricating group was looking distinctly better. Excessive stocks which have demoralized the market for more than a year were declining.

Light Fuels Tumble as Stocks Accumulate on East Coast

By H. STANLEY NORMAN

NEW YORK, Feb. 14.—Depreciated water transportation rates and higher stocks finally seized the light fuel oil market last week and sent prices tumbling to lower ground throughout the northern Atlantic seacoast district. First to fall were the domestic burning tankcar oil prices in New York, but reductions later spread to the tankwagon market at practically all northeastern Atlantic points of consumption and to the marine Diesel trade.

Most major suppliers are now quoting 4 cents per gallon for Nos. 2, 3, and 4 fuel oil in tankcars at New York, Philadelphia, Baltimore, Boston, and Providence. No. 2 fuel oil is available in some directions in the Boston tankcar market at 3.9 cents per gallon. Deliveries of light fuel oil by barges can be obtained at an eighth of a cent under the tankcar market.

Standard Oil Co. of New Jersey headed the parade of large fuel oil suppliers into lower market levels by reducing No. 2 and No. 4 fuel oil to 4 cents per gallon to the New York tankcar trade. The same company later followed the burning oil price reduction by a cut of 10 cents per barrel in marine Diesel fuel, bringing the quoted price in New York Harbor down to $1.65 per barrel. The same price was posted at Baltimore, Norfolk, Charleston, Wilmington, Philadelphia, and Boston. Heavy marine Diesel oil was posted at $1.45 per barrel in New York, Baltimore, and Philadelphia.

Weakness in the tank-wagon fuel oil market, which has been gaining momentum for three weeks, was recognized February 10 by Socony-Vacuum Oil Co., in a reduction of a half to three-quarters of a cent per gallon in its posted prices for No. 2 fuel oil. The company posted 5¾ cents per gallon for No. 2 fuel oil in tank wagons to the Brooklyn trade, but the cut elsewhere was a half cent, making the new price 6 cents per gallon. The tank wagon fuel oil market has been under severe pressure since the middle of January despite the most severe cold weather of the winter season. The pressure was largely exerted as a direct result of skidding tanker rates which declined by 10 to 15 cents per barrel from the early part of December to the middle of January. The light fuel oil stocks are growing more of a problem as the winter season progresses. Currently refiners and terminal operators are holding approximately 4,250,000 bbls. more light fuel oil than was on hand at the same time in 1938. This additional supply is beginning to press for an outlet as the burning season has only about two or two and a half months to run, the last 30 days of which will find consumption at a low level.

The weakness in light fuel oils has been spread throughout the North Atlantic consuming territory. In both Boston and Providence tankcar prices have been drifting lower and No. 2 fuel oil is reported available in both cities at 3.9 cents. One of the major Boston suppliers has cut tank-wagon prices on No. 2 fuel oil to 5¾ cents. In Brooklyn the dock price of No. 2 fuel oil to tank-wagon resellers was reported as low as 4 cents per gallon.

Kerosene prices have drifted lower in sympathy with other light fuels. Kerosene is available in some directions as low as 4⅝ cents per gallon in tankcars and barge deliveries may be obtained from the same sources of supply at 4⅜ cents in the New York market. At Boston and Providence most sellers are quoting 4.55 cents on kerosene to the tankcar trade although some of the larger suppliers are holding their quotations higher up to 5 cents per gallon.

Heavy fuel oil has suffered to a lesser extent than the light grades, although shore plant tankcar delivery of No. 6 fuel oil was dropped a quarter of a cent per gallon by Standard Oil of New Jersey in its general adjustment early last week. Bunker C fuel oil remains unchanged in New York at 95 cents per barrel. Industrial grades of fuel oil are generally quoted on the Gulf Coast at 65, 67½ and 70 cents per barrel. The number of suppliers quoting the high of the range is diminishing and a majority now in the middle of the bracket.

The motor fuel market turned much softer in this area last week. Socony-Vacuum Oil Co. lowered prices at most New York and New England points a quarter of a cent per gallon, but details of the adjustments had not been completed.

High octane motor fuel in tankcars was offered to the New York trade at prices ranging from 5⅝ to 6¼ cents per gallon. Transactions at the low of the price range were said to be few and efforts to confirm specific sales were fruitless. Investigation indicated that a majority of tankcar sales of 68-70 octane motor fuel were made between 5⅞ and 6⅛ cents per gallon. Reports were heard of offerings of high octane gasoline at 5⅝ cents per gallon in barges, but commitments at this level could not be confirmed.

The Boston and Philadelphia gasoline markets were reported in a greater degree of stability at the moment than that in New York. The antithesis of current conditions has prevailed during earlier months of the winter. The stock position along the eastern seacoast is being geared gradually to the potential rate of demand starting in April when the New York World's Fair traffic starts. In the process of gearing stocks to the bulge in demand expected during the summer months a few weak spots are certain to result and this condition is considered partially responsible for the pressure currently applied to the eastern motor fuel market.

Retail motor fuel markets did not change materially last week, although this picture is subject to change when details of Socony-Vacuum's adjustments of February 10 and 11 are available. Retail conditions in Philadelphia were relieved to some extent last week when most station operators lifted prices on regular grades by 1½ to 2 cents per gallon. Most Philadelphia retail stations are now asking 15½ to 16 cents per gallon for regular grades of motor fuel in contrast to 13½ to 14 cents posted for the past three weeks during which a price war existed. One of the bright spots in the petroleum products market is the current strength in wax prices and demand. Most eastern and Gulf Coast suppliers are now quoting 2.45 to 2.5 cents per pound for white crude scale grades. The yellow scale prices are fractionally lower and the fully refined quotations are in the range of 3½ to 3¾ cents per pound.

One or more cargoes of Pacific Coast gasoline were sold in the export trade last week for delivery in Europe, according to reports reaching eastern markets. Price and specification details were not available on a cargo of 80,000 bbls. of California gasoline loaded at El Segundo, Calif., destined for Le Havre, France.

Activity in the Gulf Coast export market was not brisk last week, but at least three or four clean tankers were fixed late in the week for February and March loading. Terms of the charters indicated

(Continued on Page 136)

A. P. I. Weekly Refinery Statistics

Week Ending February 11, 1939

FIGURES FOR THE WEEK ENDING FEBRUARY 11 NOT AVAILABLE DUE TO LINCOLN'S BIRTHDAY HOLIDAY

Stocks of Crude Oil in the United States

(BUREAU OF MINES ESTIMATES)

Week ending January 28, 1939	271,763,000 barrels
Week ending January 21, 1939	271,110,000 barrels
Week ending January 29, 1938	304,286,000 barrels

Figures do not include stocks of heavy, unrefinable California crude.

Retail Oil Markets

Tank-wagon and filling station prices on gasoline and kerosene furnished by the larger marketing firms

Prices as of February 14, 1939

Taxes

The gasoline quotations given in the following tables include the 1-cent federal tax, as well as state, county, and city taxes. The gasoline is the regular or standard grade. In most areas lower grades and a premium grade also are available.

Standard Oil Co. (Indiana)

	Gasoline Tank-wag.	Gasoline Dlr.	Gasoline Inc. tax	Kero. tank-wag.
Chicago, Ill.	15.1	12.1	4.0	10.0
Decatur	15.1	12.6	4.0	10.0
Joliet	15.1	12.6	4.0	10.0
Peoria	15.1	13.1	4.0	10.0
Quincy	14.9	12.9	4.0	8.7
Davenport, Ia.	15.1	13.6	4.0	‡10.0
Des Moines	14.9	13.4	4.0	‡9.8
Mason City	15.3	13.8	4.0	‡10.2
Duluth, Minn.	16.9	15.4	5.0	10.8
Mankato	16.5	15.0	5.0	8.9
Minneapolis	16.0	14.5	5.0	10.4
LaCrosse, Wis.	16.5	15.0	5.0	10.4
Green Bay	16.9	15.0	5.0	10.3
Milwaukee	14.9	13.4	5.0	10.2
Detroit, Mich.	13.1	11.6	4.0	7.1
Grand Rapids	14.0	12.5	4.0	9.7
Saginaw	15.8	14.3	4.0	9.3
Evansville, Ind.	16.6	15.1	5.0	†10.5
Indianapolis	16.8	15.3	5.0	†10.0
South Bend	17.1	15.6	5.0	†9.0
Fargo, N. Dak.	16.7	15.2	4.0	11.6
Minot	18.0	16.5	4.0	12.9
Huron, S. Dak.	17.0	15.5	5.0	10.9
Kans. City, Mo.*	14.4	11.9	4.0	7.5
St. Louis*	14.2	12.7	4.0	8.0
St. Joseph	14.4	11.2	4.0	9.3
Wichita, Kans.	13.9	10.6	4.0	7.3

*State tax 2 cents, 1-cent city tax and 1-cent federal tax. †Does not include 4-cent state tax. ‡Does not include 3-cent state tax.

Exclusive of state general sales taxes.

Discounts to commercial consumers: On purchases per month off tank-wagon prices: 1,000 gallons or more, 1.5 cents off; minimum delivery 25 gallons.

Stanolex Fuel Oil in Chicago

Effective January 30, 1939, f.o.b. Chicago tank-wagon prices: Standard range oil, 1-99 gallons, 9.25 cents; 100-149 gallons, 8.25 cents; 150 gallons and over, 7.75 cents. Stanolex fuel oil No. 1, 1-149 gallons, 8.25 cents; 150-399 gallons, 7.25 cents; 400 gallons and over, 6.75 cents. Stanolex furnace oil, 1-149 gallons, 8.25 cents; 150-399 gallons, 7.25 cents; 400 gallons and over, 6.75 cents. Stanolex Grade A, 1-399 gallons, 5 cents; 400 gallons and over, 4 cents. Stanolex Grade B, 1-799 gallons, 4.75 cents; 800 gallons and over, 3.75 cents.

Ohio

STANDARD OIL CO. OF OHIO

	Gasoline Tank-wag. con'r.	Gasoline Di-vided dlr.	Gasoline Inc. tax	Kero. tank-wag.
Ohio points	16.0	15.0	5.0	*13.0

*Includes state tax of 1 cent.

Southern District

STANDARD OIL CO. (KENTUCKY)

	Gasoline Cons'r. tank-wag.	Gasoline Net dlr.	Gasoline Inc. tax	Kero. tank-wag.
Atlanta, Ga.	18.5	15.5	7.0	8.5
Augusta	19.5	16.5	7.0	10.0
Macon	18.0	15.0	7.0	10.0
Savannah	19.0	16.0	7.0	8.0
Birmingham, Ala.	20.0	17.0	8.0	8.5
Mobile	21.0	18.0	9.0	8.5
Montgomery	21.0	19.0	9.0	10.5
Jackson, Miss.	17.5	14.5	7.0	9.5
Vicksburg	19.0	16.0	7.0	9.0
Jacksonville, Fla.	20.0	17.0	8.0	8.0
Miami	19.5	16.5	8.0	8.0
Pensacola	21.0	18.0	9.0	8.0
Tampa	19.0	16.0	8.0	8.0
Lexington, Ky.	19.0	16.0	6.0	10.0
Covington	17.5	14.5	6.0	9.5
Louisville	17.5	14.5	6.0	9.0
Paducah	18.5	15.5	6.0	9.0

Price basis to tank-wagon consumers: Effective January 4, 1937; 3 cents per gallon below tank-wagon price. Effective June 4, 1938, 2 cents per gallon discount eliminated from all kerosene markets in Mississippi, Alabama, Georgia, and Florida, markets being reduced correspondingly to a net basis.

Montgomery, Ala., has a county tax of 1 cent per gallon, and a city tax of 1 cent per gallon on gasoline, in addition to state tax and 1 cent per gallon on kerosene. Mobile, Ala., has a city gasoline tax of 2 cents per gallon; Birmingham, Ala., has a city gasoline tax of 1 cent per gallon; Pensacola, Fla., has a city gasoline tax of 1 cent.

Atlantic Coast District

STANDARD OIL CO. OF NEW JERSEY

	Gasoline Cons. tank-car	Gasoline Dlr. tank-wag.	Gasoline Inc. tax	Kero. tank-wag.
Atl'tic City, N. J.	10.9	12.7	4.0	8.0
Newark	10.9	12.7	4.0	8.0
Annapolis, Md.	12.85	14.35	5.0	9.5
Baltimore	12.25	13.75	5.0	8.5
Cumberland	13.65	16.15	5.0	10.0
Wash'g'n, D. C.	10.50	12.0	3.0	9.5
Danville, Va.	14.45	16.95	6.0	12.9
Norfolk	13.25	15.75	6.0	11.5
Petersburg	13.55	16.05	6.0	11.7
Richmond	13.55	16.05	6.0	8.7
Roanoke	14.75	17.25	6.0	11.0
Charles'n, W. Va.	14.05	16.55	6.0	12.6
Parkersburg	13.35	14.85	6.0	11.2
Wheeling	14.35	15.75	6.0	12.2
Charlotte, N. C.	15.65	18.15	7.0	12.1
Hickory	16.15	18.65	7.0	12.5
Mt. Airy	15.95	18.45	7.0	12.3
Raleigh	15.25	17.75	7.0	11.6
Salisbury	15.75	18.25	7.0	12.2
Charleston, S. C.	14.25	16.75	7.0	10.6
Columbia	15.25	17.25	7.0	11.6
Spartanburg	15.95	18.45	7.0	12.4

Price basis to commercial consumers, effective March 8, 1937, in Maryland, District of Columbia, and in Arlington and Fairfax counties in Virginia; and March 12 in New Jersey: To contract accounts purchasing at least one full compartment at time by hose connection, on yearly purchases: From 2,500 to 100,000 gallons, consumer tank-wagon price at time and place of delivery; 100,000 gallons per year, consumer tankcar price plus .5 cent per gallon. Consumer tank-wagon price generally will be equivalent to dealer tank-wagon price less .5 cent per gallon.

Effective January 16, 1939, in North Carolina the commercial consumer schedule became as follows: Single deliveries of 50 gallons or more, consumer tank-wagon price. Single deliveries of less than 50 gallons, 4 cents per gallon over consumer tank-wagon price. Generally the posted consumer tank-wagon price will be equivalent to the dealer price, less .5 cent per gallon. The above policy also applies in South Carolina effective January 23, 1939.

Discounts for kerosene, 1 cent off tank-wagon price for 25 gallons or more under contract (contract not necessary in Baltimore) except no discount in New Jersey.

Pacific Coast Territory

STANDARD OIL CO. OF CALIFORNIA

	Gasoline Tank-wag.	Gasoline Serv. sta.	Gasoline Inc. tax	Kero. tank-wag.
San Francisco	17.5	18.5	4.0	11.5
Los Angeles	17.0	18.0	4.0	10.0
Fresno, Calif.	18.5	19.5	4.0	12.5
Phoenix, Ariz.	21.5	22.5	6.0	*17.5
Reno, Nev.	20.5	21.5	5.0	13.5
Portland, Ore.	20.0	21.0	6.0	13.5
Seattle, Wash.	20.0	21.0	6.0	13.5
Spokane	23.0	24.0	6.0	16.5
Tacoma	20.0	21.0	6.0	13.5

*Includes 5-cent state tax.

Discounts to dealers: On gasoline, off tank-wagon price, to 100 per cent dealers, 3 cents; to split dealers, 2 cents. To commercial consumers: On tank-wagon price: on single deliveries of 40 gallons and over, advance quantity discount extended at time of delivery, 3 cents. Service station schedule applies on single deliveries less than 40 gallons. On kerosene in tankcar, transport truck and trailer delivery, 3 cents off tank-wagon price; plant deliveries to jobbers, 2.5 cents below tank-wagon.

Pennsylvania, Delaware, and Part of New England

ATLANTIC REFINING CO.

	Gasoline Cons. tank-car	Gasoline Dlr. tank-wag.	Gasoline Inc. tax	Kero. tank-wag.
Philadelphia, Pa.	12.0	13.0	5.0	10.0
Pittsburgh	13.0	15.0	5.0	10.5
Allentown	12.75	14.25	5.0	10.5
Erie	13.0	14.5	5.0	10.0
Scranton	13.0	14.5	5.0	10.5
Altoona	13.0	15.0	5.0	10.5
Dover, Del.	...	13.5	5.0	10.5
Wilmington	...	12.5	5.0	9.75

Price basis to undivided dealers, dealer tank-wagon price less .5 cent per gallon. Price basis to commercial consumers in Pennsylvania and Delaware, effective March 11, 1937: Consumers under contract using 100,000 gallons or more per year full compartment hose deliveries, tankcar plus .5 cent. Consumers under contract using less than 100,000 gallons per year compartment hose deliveries, undivided dealer price. Consumers under contract less than full compartment delivery, consumers not under contract, less than full compartment delivery, and consumers not under contract full compartment delivery, divided dealer price. Less than 25 gallons, tank-wagon delivery, 4 cents per gallon above undivided dealer price.

New York and New England

SOCONY-VACUUM OIL CO., INC.

	Gasoline Cons. tank-car	Gasoline Dlr. tank-wag.	Gasoline Inc. tax	Kero. tank-wag.
Albany	11.5	13.8	5.0	8.0
*Met. N. Y.:				
Manhat., Bronx	11.5	12.9	5.0	8.0
Staten Island	11.5	12.9	5.0	8.0
Queens, Brklyn.	11.5	12.9	5.0	8.0
Buffalo	12.0	12.5	5.0	7.5
Rochester	12.5	13.5	5.0	7.5
Syracuse	12.0	13.5	5.0	8.5
Boston, Mass.	10.25	12.3	4.0	7.0
Portland, Me.	11.5	13.5	5.0	7.5
Manchester, N. H.	12.1	14.1	5.0	8.0
Burlington, Vt.	12.0	14.2	5.0	9.0
Springfield, Mass.	10.75	12.8	4.0	7.5
Worcester	10.75	12.8	4.0	7.5
Hartford, Conn.	10.75	12.8	4.0	6.5
New Haven	10.75	11.5	4.0	6.0
Providence, R. I.	10.25	12.3	4.0	7.0

*Does not include 2 per cent city sales tax which is calculated on basis of net retail price exclusive of state and federal taxes. Metropolitan New York prices are undivided dealer prices; others are split dealer.

Price basis to undivided dealer: Posted dealer tank-wagon price less .5 cent. Price basis to commercial consumer: Effective Nov. 15, 1936, monthly purchases of 25,000 gallons and over, consumer tankcar prices at delivery point plus .5 cent per gallon; monthly purchases of 5,000 to 25,000 gallons, undivided dealer price at delivery point; monthly purchases under 5,000 gallons, pay divided dealer tank-wagon prices at delivery point.

Rocky Mountain District

CONTINENTAL OIL CO.

	Gasoline Dealer	Gasoline Inc. tax	Kero. tank-wag.
Denver, Colo.	15.5	5.0	11.5
Grand Junction	16.0	5.0	15.0
Pueblo	13.0	5.0	10.5
Casper, Wyo.	17.0	5.0	11.5
Cheyenne	15.0	5.0	13.0
Billings, Mont.	18.0	6.0	13.0
Butte	19.5	6.0	15.5
Great Falls	18.0	6.0	15.5
Helena	19.0	6.0	15.5
Salt Lake City, Utah	16.0	5.0	16.0
Boise, Idaho	19.0	6.0	18.0
Twin Falls	19.5	6.0	18.0
Albuquerque, N. M.	16.0	*6.5	10.0

*Includes city tax of .5 cent.

Nebraska

STANDARD OIL CO. OF NEBRASKA

	Gasoline Tank-wag.	Gasoline Dlr.	Gasoline Inc. tax	Kero. tank-wag.
Omaha	17.5	14.5	6.0	10.3
McCook	17.5	15.5	6.0	10.0
Norfolk	17.9	14.9	6.0	10.7
North Platte	18.3	15.4	6.0	11.0
Scottsbluff	17.0	14.9	6.0	11.2

Discounts to commercial consumers for tank-wagon deliveries covered only by standard commercial consumers contract, effective January 1, 1935.

Central South District

STANDARD OIL CO. OF LOUISIANA

	Gasoline Cons. tank-car	Gasoline Dlr. tank-wag.	Gasoline Inc. tax	Kero. tank-wag.
N. Orleans, La.	16.75	19.25	*10.0	†11.0
Baton Rouge	14.75	17.25	8.0	‡10.5
Alexandria	14.75	17.25	8.0	‡12.5
Lafayette	15.00	17.50	8.0	‡12.5
Lake Charles	14.75	17.25	8.0	‡12.5
Shreveport	13.50	16.00	8.0	‡11.0
Knoxville, Tenn.	18.00	20.50	8.0	14.5
Memphis	16.00	18.50	8.0	12.5
Chattanooga	17.50	20.00	8.0	14.0
Nashville	17.00	19.50	8.0	12.0
Bristol	18.25	17.00	8.0	14.5

*Includes 2-cent parish tax. †Includes 1-cent parish tax and 1-cent state tax. ‡Includes 1-cent state tax.

Price basis to commercial consumers: Effective May 15, 1937, deliveries of 50 gallons or more in one delivery take posted consumer tank-wagon price. Accounts taking deliveries of less than 50 gallons at one time pay posted consumer tank-wagon price plus 4 cents per gallon. Generally, the posted consumer tank-wagon price will be equivalent to the dealer price less .5 cent per gallon. Kerosene prices include 1-cent state tax.

Effective December 12, 1938, the company revised its commercial consumer policy on motor fuel in New Orleans, as follows: Single deliveries of less than 50 gallons, consumer tankcar plus 2 cents per gallon; 50 to 199 gallons, consumer tankcar plus 1 cent per gallon; 200 gallons and over, consumer tankcar plus .5 cent per gallon.

Oklahoma and Arkansas

CONTINENTAL OIL CO.

	Gasoline Dealer	Gasoline Inc. tax	Kero. tank-wag.
Texarkana, Ark.	12.0	5.0	8.0
Fort Smith	13.25	5.0	7.5
Little Rock	16.75	7.5	9.0
Muskogee, Okla.	13.0	5.0	7.0
Oklahoma City	10.5	5.0	6.0
Tulsa	10.0	5.0	6.0

Texas

	Gasoline Tank-wag.	Gasoline Serv. sta.	Gasoline Inc. tax	Kero. tank-wag.
Dallas, Tex.	11.0	15.0	5.0	7.0
Fort Worth	11.0	15.0	5.0	8.0
Houston	13.0	17.0	5.0	8.0
San Antonio	14.0	18.0	5.0	8.0

Naphtha

STANDARD OIL CO. (INDIANA)

	Tank-wagon*
Oleum spirits	15.7
V.M.&P. naphtha	16.0
Cleaners' naphtha	15.0
Stanisol	15.0

*Prices include 3-cent Illinois tax but not 1-cent federal tax or 2 per cent retail occupational tax.

Prices f.o.b. Chicago. Each price subject to discount of 1 cent per gallon for 150-gallon lots if covered by contract.

Canada*

3-Star Imperial Gasoline
IMPERIAL OIL, LTD.

	Tank-wag.	Inc. tax	Kero. tank-wag.
Halifax, N. S.	23.5	10.0	17.5
St. John, N. B.	23.5	10.0	17.5
Montreal, Que.	20.0	6.0	14.5
Toronto, Ont.	21.0	6.0	15.5
Hamilton, Ont.	21.0	6.0	15.5
Winnipeg, Man.	27.5	7.0	20.7
Brandon, Man.	28.1	7.0	22.9
Regina, Sask.	26.0	7.0	22.0
Saskatoon, Sask.	28.3	7.0	24.9
Edmonton, Alta.	26.5	7.0	21.5
Calgary, Alta.	23.5	7.0	19.0
Vancouver, B. C.	23.0	7.0	23.0

*Imperial gallon used in Canada.

Divided dealers pay tank-wagon prices. Discount to undivided dealers, 1 cent below tank-wagon price. In maritime provinces both divided and undivided dealers pay tank-wagon price.

Tank-Wagon Changes

Continental Oil Co. January 27 reduced dealer gasoline 1 cent in Oklahoma City; January 30, reduced dealer gasoline .5 cent in Muskogee; February 7, reduced dealer gasoline 1.5 cents in Pueblo.

Standard Oil Co. (Kentucky) February 1 reduced consumer tank-wagon and net dealer gasoline 1 cent in Birmingham; February 3, reduced tank-wagon kerosene 1 cent in Macon.

Standard Oil Co. of Nebraska February 4 reduced dealer gasoline 1 cent in North Platte; February 8, reduced dealer gasoline 1.5 cents in Omaha.

Standard Oil Co. of New Jersey February 8 reduced tank-wagon kerosene 3 cents in Richmond.

Socony-Vacuum Oil Co., Inc., February 10 reduced consumer tankcar gasoline .25 cent in Albany, metropolitan New York, Boston, Portland, Springfield, Worcester, and Providence; .4 cent in Syracuse; .2 cent in Manchester; .3 cent in Burlington; .15 cent in Hartford; .05 cent in New Haven; on the same date reduced dealer tank-wagon gasoline .2 cent in Boston, Springfield, Worcester, and Providence; .5 cent in Portland and Burlington; .4 cent in Manchester; .1 cent in Hartford.

Standard Oil Co. (Indiana) reduced tank-wagon gasoline in Milwaukee 1 cent January 25 and .4 cent January 28; reduced tank-wagon gasoline .8 cent in Grand Rapids January 31; reduced dealer gasoline 1 cent in Grand Rapids January 28.

Prices of Refined Products

All quotations f.o.b. plant in cars for interstate or export movement except as otherwise noted

Prices as of February 14, 1939

The following quotations are exclusive of the federal excise taxes of 1 cent a gallon on gasoline and 4 cents a gallon on lubricating oils.

Refinery Gasoline

OKLAHOMA (Group 3)—

U. S. Motor grades:		
62 octane and below	.03½	.03⅝
63-66 octane	.03⅞	.04
67-69 octane	.04⅛	.04⅜
70-72 octane (regular)	.04⅜	.04⅝
60-62 400 grades:		
62 octane and below	.03½	.03⅝
63-66 octane	.03⅞	.04
67-69 octane	.04⅛	.04⅜
70-72 octane (regular)	.04⅜	.04⅝
64-66 375	.04	.04⅛
68-70 360	.05	.05⅛

NORTH TEXAS—

U. S. Motor grades:		
62 octane and below	.03½	.03⅝
63-66 octane	.03⅞	.04
67-69 octane	.04⅛	.04⅜
70-72 octane (regular)	.04⅜	.04⅝
60-62 400	.03½	.03⅝
64-66 375	.04	.04⅛

NORTH LOUISIANA (Ark. and N. La. delivery)—

U. S. Motor grades:		
62 octane and below	.04	.04⅛
63-66 octane	.04⅛	.04½
67-69 octane	.04½	.04⅝
70-72 octane (regular)	.04⅞	.05⅛

ARKANSAS (Ark. and N. La. del.)—

U. S. Motor grades:		
62 octane and below		.04
67-69 octane	.05	.05½

CHICAGO (Based on Group 3)—

U. S. Motor grades:		
62 octane and below	.03⅝	.03¾
63-66 octane	.03⅞	.04⅛
67-69 octane	.04⅛	.04⅜
70-72 octane	.04⅜	.04⅝
60-62 400 grades:		
62 octane and below	.03⅝	.03¾
63-66 octane	.03⅞	.04⅛
67-69 octane	.04⅛	.04⅜
70-72 octane	.04⅜	.04⅝
64-66 375	.04	.04⅛
68-70 360	.05	.05⅛

PENNSYLVANIA (inland refineries)—

58-60 U. S. Motor:		
Below 60 octane	.04¼	.04¾
65 octane		.06¼
68-70 octane		.06½

CALIFORNIA (domestic movement)—

54-58 U. S. Motor	.06½	.08
58-60 400, 65 oct. and higher	.07½	.09

EAST COAST (domestic)—

U. S. Motor, 65 and above:		
*New York (Bayonne)	.06	.06¼
Philadelphia	.06	.06¼
Baltimore	.06	.06¼
Charleston, S. C.	.06½	.06¾

*All grades of gasoline one-eighth to one-fourth cent less for barge shipments. New York Harbor prices are for New York and New England delivery. Prices for New Jersey delivery one-fourth cent lower.

GULF COAST (domestic)—

U. S. Motor grades:		
Below 60 octane		.04¼
60-64.9	.04½	.04⅝
65 octane and higher		.04⅝
68-70	.04⅞	.05⅛

Naphtha

PENNSYLVANIA (inland refineries)—

52-56 450 (blending)	.04¼	.04½

Natural Gasoline

OKLAHOMA (Group 3)—

Grade 26-70		.02½
Grade 18-55		.03

NORTH TEXAS—

Grade 26-70	.02⅜	.02½
Grade 18-55	.02¾	.02⅞

CALIFORNIA—

75-85 375-390	.06½	.07

NORTH LOUISIANA (Ark. and N. La. delivery)—

Grade 26-70		.02¾

Tractor Fuel

OKLAHOMA (Group 3)—

40-42 gr., 315-325 i.b.p., 110-flash, 540-550 e.p.	.03¾	.03⅞
41-43 gr., 300-320 i.b.p., 110-125 flash, 500-520 e.p.	.04	.04¼
46-48 gr., 210-230 i.b.p., 480-max., e.p.	.04¾	.04⅞

Kerosene

(All kerosene water white)

OKLAHOMA (Group 3)—

41-43	.03⅞	.04
42-44	.04⅛	.04¼

NORTH TEXAS—

41-43	.04	.04⅛

NORTH LOUISIANA (Ark. and N. La. delivery)—

41-43	.04	.04⅜

ARKANSAS (Ark. and N. La. del.)—

41-43		.04½

PENNSYLVANIA (inland refineries)—

45	.04⅝	.04⅞
46	.04¾	.05
47	.04⅞	.05⅛

CHICAGO (Based on Group 3)—

41-43	.03⅞	.04⅛
42-44	.04⅛	.04⅜

CALIFORNIA (Pac. Coast market)—

38-43 high burning test	.04¾	.05¾

NEW YORK (Bayonne, N. J.)—

41-43	.04⅝	.04⅞

***GULF COAST (domestic)—**

41-43	.03⅞	.04⅛

*Barge price one-eighth cent lower.

Furnace Oil

OKLAHOMA (Group 3)—

Range oil	.03⅝	.03¾
No. 1 prime white, 38-42	.03½	.03⅝
No. 1 straw, 38-40	.03⅜	.03½
No. 2 straw, 32-36	.03¼	.03⅜
No. 2 dark, 32-36	.03¼	.03¼
No. 3 zero to 15, 28-32	.03	.03¼
No. 3, 15 and above, 28-32	.02¾	.02⅞

NORTH TEXAS—

No. 1 prime white, 38-42	.03⅝	.03¾
No. 1 straw, 38-40	.03½	.03⅝

NORTH LOUISIANA (Ark. and N. La. delivery)—

No. 2, 32-36	.03⅜	.03⅝

ARKANSAS (Ark. and N. La. del.)—

No. 2, 32-36		.03⅝

CHICAGO (Based on Group 3)—

Range oil	.03⅝	.03¾
No. 1 prime white, 38-40	.03½	.03⅝
No. 1 straw, 38-40	.03⅜	.03½
No. 2 straw, 32-36	.03¼	.03⅜
No. 2 dark, 32-36	.03¼	.03¼
No. 3, zero to 15, 28-32	.03	.03⅛
No. 3, 15 and above, 28-32	.02¾	.02⅞

NEW YORK (Bayonne, N. J.)—

*No. 1	.04½	.04⅝
*No. 2		.04
*No. 4		.04

*Barge deliveries one-eighth to one-fourth cent under above tankcar price.

Gas Oil and Fuel Oil

(Gas oil per gal., fuel oil per bbl.)

OKLAHOMA (Group 3)—

U.G.I. gas oil	.02⅞	.03⅛
No. 4, low pourpoint, 24-28	1.00	1.10
No. 4, 15 and above, 24-28	.85	.90
No. 5, low pourpoint, 18-22	.70	.75
Below 14 fuel oil, industrial	.50	.60

NORTH TEXAS—

U.G.I. gas oil	.02⅞	.03⅛
No. 4, low pourpoint, 24-28	1.00	1.10
No. 5, low pourpoint, 18-22	.70	.75
Below 14 fuel oil, industrial	.50	.60

NORTH LOUISIANA (Ark. and N. La. delivery)—

10-14 fuel oil, industrial	.70	.75

CHICAGO (Based on Group 3)—

U.G.I. gas oil	.02¾	.02⅞
No. 4, low pourpoint, 24-28	1.00	1.10
No. 4, 15 and above, 24-28	.85	.95
No. 5, low pourpoint, 18-22	.70	.80
No. 5, 15 and above, 18-22	.60	.70
No. 6, low pourpoint, 10-16	.60	.70
No. 6, 15 and above, 10-16	.35	.45

PENNSYLVANIA (inland refineries)—

36-40	.03¾	.04⅛

CALIFORNIA—

Los Angeles:		
30-40 gas oil, per bbl.	1.15	1.35
24 plus Diesel, per bbl.	1.00	1.30
24 plus Diesel (bunkers)	1.15	1.50
12-16 (bunkers at tidewater)	.75	.90
10-16 (cargo lots)	.60	.80
12-17 (tankcars)	.50	.80
10-17 (high sulfur)	.45	.70
San Joaquin Valley:		
10-18 (tankcars)	.50	.80
24 plus Diesel, per bbl.	1.15	1.40
San Francisco:		
24 plus Diesel, per bbl.	1.40	1.45
24 plus Diesel (bunkers)	1.45	1.55
10-16 (bunkers)	.90	.95

GULF COAST—

No. 2 fuel	.03⅜	.03⅝
43-47 Diesel	.03½	.03¾
48-52 Diesel	.03½	.03¾
53-57 Diesel	.03¾	.03⅞
Bunker C (bulk cargoes)	.67½	.70
Bunker C (bunkers)		.75

NEW YORK (Bayonne, N. J.)—

27 plus, gas oil		.04
28-30 Diesel (lighterage 6¼c per bbl.)		1.65
28-30 Diesel (tankcars)	.04¼	.04½
Bunker C (to ocean-going ships in N. Y. Harbor)		.95
Industrial fuel (tankcars)		.03¼

Lighterage charge 5c bbl. additional.

Bright and Steam Refined

OKLAHOMA (Group 3)—

190-200 D, 15-25		.19
150-160 D, 0-10	.14¼	.16
150-160 D, 15-25	.13½	.15½
150-160 E, 15-25	.13	.15
100-110 D, 0-10		.14½
Steam refined:		
631 green (treated)		.12½
600 dark green (untreated)	.04½	.05

PENNSYLVANIA—

Bright Stocks (Pennsylvania Grade No. 8 color, 140-150 at 210, 545-550 flash):		
10 pourpoint	.17	.17½
15 pourpoint	.16	.16½
20 pourpoint	.15	.15½
25 pourpoint	.14	.14½
Steam refined:		
600	.08	.08½
650	.10	.10½
600 Pennsylvania flash	.10½	.11
630 flash	.13½	.14
600 Warren E filtered	.12½	.13

Neutral Oil

(Vis. at 100° F. except Pennsylvania and color N.G.A.)

OKLAHOMA (Group 3)—

150-3	.09
180-3	.10
180-4	.09½
200-3	.10½
200-4	.10
250-3	.11½
250-4	.11
280-3	.12½
280-4	.12
300-6½	.13
400-3½	.14
100-2½ paraffin oil	.06
15-20 pourpoint:	
200-3	.10
200-4	.09½
250-3	.11
250-4	.10½
280-3	.12
280-4	.12½

GULF COAST—

Pale oils:		
200-3	.07	.07¼
300-3	.07½	.07¾
500-3½	.08½	.08¾
750-3½	.08¾	.09¼
1,200-3½	.09½	.09¾
1,500-4	.09¾	.10
Red oils:		
200-5-6	.07¼	.07½
300-5-6	.07¼	.07½
500-5-6	.08	.08½
750	.08¾	.09
1,200-5-6	.09¼	.09½

CALIFORNIA (moving to dom. market)—

Pale oils:		
100-2½-3	.07¼	.08
200-2½-3	.07¼	.08
300-3½-3	.07¼	.08
400-3-4	.07¼	.08
450-3-4	.07¼	.08
550-3-4	.09	.11
600-3-4	.09	.11
Red oils:		
200-4-5	.07¼	.08
300-5-6	.07¼	.08
350-5-6	.09¼	.11½
400-5-6	.09¼	.11½
450-5-6	.09¼	.11½
500-5-6	.09¼	.11½
600-5-6½	.09¼	.11½
700-6½ plus	.09¼	.11½
750-6½ plus	.09¼	.11½
900-6½ plus	.09¼	.11½

PENNSYLVANIA—

150 vis. at 70° F., 3 color, 400-405 flash:		
Zero pourpoint	.16	.16½
10 pourpoint	.15	.15½
15 pourpoint	.14	.14½
25 pourpoint	.13	.13½
200 vis. at 70° F., 3 color:		
Zero pourpoint	.18	.18½
10 pourpoint	.17	.17½
15 pourpoint	.16	.16½
25 pourpoint	.15	.15½

Wax and Petrolatum

(Prices per pound)

OKLAHOMA (Group 3)—

124-126 (a.m.p.) w.c. scale		.0250

PENNSYLVANIA (inland refineries)—

122-124 (a.m.p.) w.c. scale	.0235	.0245
124-126 (a.m.p.) w.c. scale	.0235	.0245

NEW YORK—

Wax in bags fully refined:	
122-125 (a.m.p.) wax	.0350
125-127 (a.m.p.) wax	.0360
128-130 (a.m.p.) wax	.0375
130-132 (a.m.p.) wax	.0435
133-135 (a.m.p.) wax	.0465
135-137 (a.m.p.) wax	.0490
124-126 (a.m.p.) w.s.	.0245
124-126 (a.m.p.) y.s.	.0240
Petrolatum in barrels, carload lots:	
Dark green	.02 .02½
Amber	.02½ .02½
Extra amber	.02½ .02½
Lily white	.05½ .05½
Snow white	.06½ .06½
Cream	.04¼ .04¼

Export Prices

GASOLINE

GULF COAST—

U. S. Motor	.04¼	.04⅜
60-62 400	.04¼	.04⅜
61-63 390	.04⅜	.04⅝
64-66 375	.04½	.04⅝

LOS ANGELES—

U. S. Motor grades:		
55-65 octane	.04½	.04¾
65-69 octane	.04¾	.05
Above 69 octane	.05	.05½

KEROSENE

GULF COAST—

41-43 prime white	.03⅞	.04⅛
41-43 water white	.03⅞	.04⅛

LOS ANGELES—

41-43 water white	.05	.05¼

LUBRICANTS

(Pennsylvania Grade)

NEW YORK (f.o.s. in bbls.)—

Cylinder stocks:		
600 Warren E	.15	.15½
600 S.R. unfiltered	.16	.16½
630 S.R. unfiltered	.17	.17½
600 flash, S.R.	.17	.17½
630 flash, S.R.	.20½	.21
Bright stocks:		
8 color	.16¼	.16½

NEUTRAL OIL

200-3 color	.21½	.22
150-3 color	.19½	.20

PARAFFIN WAX

NEW YORK (prices per pound)—

123-125 a.m.p.		.0375
125-127 a.m.p.		.0387
128-130 a.m.p.		.0412
133-135 a.m.p.		.0437
135-137 a.m.p.		.0455
Crude scale:		
124-126 w.s.	.0245	.0250
124-126 v.s.	.0245	.0250

Crude Oil Prices

Oklahoma, Kansas, North Central and East Central Texas

East Texas (Oct. 11, 1938)* $1.10
Van, Tex. (Oct. 11, 1938)* ..... .93
Talco, Tex. (Oct. 11, 1938)* ..... .55
Rodessa, Tex. ..... See North Louisiana gravity schedule
Cass and Panola counties, Texas ..... See gravity schedule
Altus and Tipton† ..... See note below
Cayuga, Tex. (Oct. 12) ..... .81
Clay Creek, Tex. ..... .85

*Humble Oil & Refining Co. †Gulf Refining Co.

Altus and Tipton, Okla., starting at below 25 degrees at 71 cents, 2-cent spread to 40 degrees and above at $1.03. East Texas price met by all buyers posting prices. Talco price adopted by Talco Pipe Line on October 11. Cayuga posted by Tide Water Associated Oil Co. Clay Creek posted by Sun Oil Co.

Southwest Texas

Salt Flat, Darst Creek, Hilbig, Carroll, Clark and Zoboroski (Oct. 11, 1938)* ..... $ .96
Pettus (Oct. 11, 1938)* 1.29
Flour Bluff (Dec. 3, 1938)* 1.23
Darst Creek (Oct. 12, 1938)† ..... .96
Darst Creek and Bruner (Oct. 13, 1938)‡ ..... .96
Luling (Oct. 12, 1938)† ..... .87
Lytton Spings (Oct. 12, 1938)† ..... .99
Mirando (Oct. 12, 1938)† ....
Government Wells (Oct. 13, 1938) ..... See note below

*Humble Oil & Refining Co. †Magnolia Petroleum Co. Pettus price adopted by Atlantic Crude Oil Purchasing Co. ‡Gulf Refining Co.

Government Wells posted by Sun Oil Co. starts at 20 gravity, 77 cents, 3-cent spread to 24-24.9 at 89 cents.

Gulf Coast

Conroe, Tex. (Oct. 11, 1938)* $1.27
Black Bayou and White Castle, La. (Oct. 11, 1938)† ..... See note below
Gibson, La. (Oct. 11, 1938)† 1.04
Garden Island, La. (Oct. 12, 1938)‡ 1.24
Lafitte, La. (Oct. 12, 1938)‡ 1.04
Cleveland, Tex. (Oct. 12, 1938)¶ 1.14
Hardin, Tex. (Oct. 12, 1938)¶ 1.02
Tepetate, La. (Oct. 11, 1938)§ 1.03
Villa Platte, La. (Oct. 11, 1938)§ 1.03
Abbeville, La. (Jan. 1, 1939)§ ..... See note below
Bosco, La. (Dec. 3, 1938)‖ ..... .93
Creole, La. (Oct. 13, 1938)‖ ..... .96
Gueydan, Sweet Lake, and Louise, La. (Oct. 13, 1938)‖ ..... See note below
Vinton, Edgerly, Starks, Hackberry, Timbalier Bay, Quarantine Bay, and Grand Bay, La. (Oct. 13, 1938)** ....
Long Lake, Tex. (Oct. 13, 1938)** 1.08
Segno and Wing (Oct. 13, 1938)** ..... See note below
Livingston (Oct. 11, 1938)† 1.10
Gibson, La. (Oct. 11, 1938)† 1.04

*Humble Oil & Refining Co. †Shell Petroleum Corp. ‡Texas Co. §Continental Oil Co. ‖Magnolia Petroleum Co. ‖Pure Oil Co. **Gulf Refining Co.

Black Bayou, etc., starts at below 20 degrees at 79 cents; 20-20.9, 81 cents; 21-21.9, 83 cents, then a 3-cent spread to 26-26.9 degrees, 98 cents, and 27 degrees and over $1. Abbeville starts at below 36 degrees, 92 cents, 2-cent spread to 40 degrees and over at $1.02. Gueydan, etc., starts at below 20 degrees, 79 cents, 3-cent spread to 26-26.9 degrees at $1, and 2-cent spread to 40 degrees and over at $1.28. Segno and Wing take Gulf Refining Co.'s Gulf Coast prices. Vinton, Edgerly, etc., schedule starts at below 18 gravity, 76 cents, 2-cent spread to 20-20.9 at 82 cents; then a 3-cent spread to 26-26.9 at $1; then a 2-cent spread to 34 degrees and over at $1.16.

North Louisiana and Arkansas

Smackover, Ark. (Oct. 5, 1938)* ... $ .73
Buckner, Magnolia, and Village, Ark. (Oct. 5, 1938)* ..... See note below
Schuler, Jones sand ..... See note below
Tullos and Urania ..... .89
Cotton Valley, La. (distillate) (Dec. 23, 1938)* 1.20
Lisbon, La. (Sept. 19, 1938) ..... See note below

*Smackover posted by Standard Oil Co. of Louisiana, October 5, 1938; by Magnolia Petroleum Co., October 12; by Gulf Refining Co., October 13; McMillan Refining Co. and Cross Refining Co. met price. Tullos and Urania posted by Hunt Oil Co. and Arkansas Fuel Oil Co.

Schuler Jones sand schedule starts at below 25 degrees, 66 cents, with 2-cent spread to 40 and over at 98 cents; by Lion Oil Refining Co. on October 5, 1938; Schuler light Morgan sand crude takes North Louisiana gravity scale along with El Dorado and Champagnolle; by Lion Oil Refining Co., October 5; Buckner, Magnolia, and Village schedules posted by Standard Oil Co. of Louisiana and Lion Oil Refining Co. on October 5; quote same prices as for Schuler Jones sand crude.

Middle Western States

OHIO OIL CO.
(Effective October 13, 1938)

Lima, Ohio ..... $ .90
Illinois old fields 1.05
Illinois basin 1.15
Princeton, Ind. 1.05
Western Kentucky 1.10
Greendale, Porter, and Crystal, Mich. (Jan. 6, 1939)* ..... .92½
Buckeye, Bentley, Edenville, Beaverton, Mich. (Jan. 6, 1939)* ..... .90
Freeman-Redding, Mich. (Jan. 6, 1939)* ..... .82
West Branch and Arenac, Mich. (Dec. 13, 1938)* ..... .70
Allegan (Jan. 6) ..... .78
Bloomingdale (Dec. 19) ..... .84
Muskegon 1.00
Sherman, Mich. (Dec. 13, 1938)‡ ... .82
Eastern Kentucky:
Big Sandy River† 1.12
Kentucky River† 1.20

*Simrall Corp. †Ashland Refining Co. ‡Pure Transportation Co.

Rocky Mountain States

Dry Creek, Wyo. (Oct. 11, 1938)* .. $ .92
Elk Basin, Wyo. (Oct. 11, 1938)*† .. .90
Grass Creek, light, Wyo. (Oct. 11, 1938)*† ..... .90
Grass Creek, heavy (Oct. 11, 1938)† .40
Lance Creek, Wyo. (Oct. 11, 1938)* .77
Rock Creek, Wyo. (Oct. 11, 1938)* .. 1.00
Iles, light, Colo. (Oct. 11, 1938)† .. .96
Iles, heavy, Colo. (Oct. 11, 1938)† .92
Dutton Creek, Wyo. (Oct. 11, 1938)† ..... See note below
Frannie, light, Wyo. (Oct. 11, 1938)† .55
Frannie, heavy, Wyo. (Oct. 11, 1938)† .42
Hamilton dome, Wyo. (Oct. 11, 1938)† .35
Midway, Wyo. (Oct. 11, 1938)† ..... See note below
Salt Creek Tensleep crude, Wyo. (Oct. 11, 1938)† ..... .646
Salt Creek (Oct. 11, 1938) .. See note below
Canon City, Colo. (Oct. 11, 1938)‡ .. .90
Florence, Colo. (Oct. 11, 1938)‡ ... 90
Cat Creek, Mont. (Oct. 11, 1938)‡ .. 1.10
Big Muddy, Wyo. (Oct. 11, 1938)‡ .. .98
Lance Creek, Wyo. (Oct. 11, 1938)‡. .77
Lea County, N. M. ..... See West Texas gravity schedule‡
Artesia, Jackson and Maljamar ..... See gravity table‡
Fort Collins and Wellington, Colo. ..... See gravity table‡
Eddy County, N. M. (October 11, 1938)¶ ..... .77

*Ohio Oil Co. †Stanolind Oil & Gas Co. ‡Continental Oil Co. ‖Sinclair Prairie Oil Marketing Co.

Dutton Creek and Salt Creek Tensleep crude start at below 29 degrees, 86 cents, 2 cents spread to 40 and over at $1.10. Salt Creek crude excepting Tensleep, takes Standard Oil Co. of Indiana Oklahoma-Kansas prices. Stanolind Oil & Gas Co., effective October 11, discontinued posting prices in Greybull-Torchlight, Wyo., and Hogback and Hospah, N. M.

Eastern States

SOUTH PENN OIL CO.
(Effective February 1, 1939)

Pennsylvania Grade Oil in National Transit Lines (Bradford field) ... $1.88
Pennsylvania Grade Oil in Southwest Pennsylvania Lines 1.53
Pennsylvania Grade Oil in Eureka Pipe Line lines 1.47
Pennsylvania Grade Oil in Buckeye Pipe Line lines 1.45
Corning Grade Oil in Buckeye Pipe Line Co. line (Jan. 24) 1.02

TIDE WATER ASSOCIATED OIL CO. and NEW YORK TRANSIT CO.
(Effective February 1, 1939)

Bradford, Pa. $1.88
Allegany, N. Y. 1.88

PENNZOIL CO.

Group A $1.83
Group B 1.82
Group C 1.81
Group D 1.80
Group E 1.78

PURE OIL CO.
(Effective February 1, 1939)

West Virginia $1.47

West Texas

See gravity table.
Pecos County (Oct. 11, 1938)* ..... $ .78
Pecos shallow (Oct. 11, 1938)† ..... .65

*Shell Petroleum Corp., Gulf Pipe Line Co. and Humble Oil & Refining Co. †Shell Petroleum Corp.

Canada

Ontario (Oct. 25, 1938)*

Petrolia $1.90
Oil Springs 1.97

TURNER VALLEY
(January 5, 1938, by Imperial Oil, Ltd.)

Clear naphtha and discolored naphtha, 65 gravity and higher $2.14
Discolored naphtha and crude oil, 40-40.9 gravity 1.14
Increasing 2 cents for each degree gravity with top price for 64-64.9 gravity 1.62

These prices f.o.b. producers field tankage.

*Imperial Oil, Ltd.

Crude Oil Price Changes

The Bell Oil & Gas Co. of Tulsa, effective February 10, advanced its prices paid for crude oil in North Texas and the Oklahoma-Texas Red River bed areas 8 cents per barrel on all grades from 28 degrees up to 41 degrees and over. The new schedule starts with a price of 71 cents for 28-28.9 gravity and adds 2 cents for each degree up to and including 41 and over at 97 cents. These prices are, in all but the top grade, 8 cents per barrel below the generally posted North Texas prices, but the Bell company expresses the hope that "further improvement in the refined oil markets will soon occur in order to permit additional raises in crude oil prices."

Kanotex Refining Co. of Arkansas City, Kans., effective February 11, increased its prices paid for crude oil 10 cents per barrel on all grades. The schedule starts at 84 cents for oil below 28 gravity, 86 cents for 28-28.9 gravity, with 2 cents added for each degree up to and including 40 and over at $1.10. The schedule meets the posted prices of most purchasers in Oklahoma and Kansas.

Pan American Pipe Line Co., effective 7 a.m. February 15, posted 68 cents per barrel for Cayuga, Texas, crude.

New York Market

(Continued from Page 133)

that gasoline had been or would be purchased in the Gulf Coast market for delivery in England, France and Germany. Low octane gasoline was offered on the Gulf Coast at approximately an eighth of a cent below the preceding week's prices. Motor fuel of 60-64 octane rating and that falling in the lower range was offered on the Gulf Coast at 4¼ cents per gallon. The same quotation applied to the lower grades of export motor fuel, but the better qualities of gasoline were held at unchanged levels ranging up to 5 or 5⅛ cents for 68 octane.

Warwick Shallow Field

In the Warwick field, Lambton County, Ontario, crude production for approximate three months ending December 31 was close to 9,000 bbls., valued at approximately $18,000. A considerable portion of this production was from the two Heal-Birchall top show wells on the Sam Birchall farm, Lot 27, Concession 5, which are still maintaining a good production.

Crude Prices by Gravities

	1 Oklahoma	2 Oklahoma and Kansas	3 North and Central Texas	4 Louisiana and Arkansas	5 East Central Texas	6 Gray County, Texas	7 Hutchinson and Carson counties, Texas	8 Raccoon Bend, Satsuma and Tomball, Texas	9 West Texas and Lea County, N. M.	10 Fort Collins and Wellington, Colo.	11 Anahuac and Dickinson, Texas	12 Refugio, Texas	13 Mirando and Duval Texas	14 Gulf Coast Texas	15 Cass and Panola counties, Texas	16 Beaumont and West Beaumont, Texas	17 Lockport, Iowa, Cameron Meadows, Louisiana	18 Artesia, Jackson, and Maljamar, N. M.	19 Iowa, Louisiana
Below 18	....	....	....	....	....	....	....	....	$.53	....	$.74	$.79	$.74	$.79	....	....	$.74	....	$.75
18-18.9	....	....	....	....	....	....	....	....	.53	....	.74	.79	.74	.79	....	....	.76	....	.77
19-19.9	....	....	....	....	....	....	....	....	.53	....	.74	.79	.74	.79	....	$.79	.76	....	.79
20-20.9	$.60	$.70	....	....	....	....	....	....	.55	....	.77	.82	.77	.82	....	.82	.80	....	.81
21-21.9	.63	.72	....	....	....	....	....	....	.57	....	.80	.85	.80	.85	....	.85	.82	....	.83
22-22.9	.66	.74	....	....	....	....	....	$.95	.59	....	.83	.88	.83	.88	....	.88	.85	....	.86
23-23.9	.69	.76	....	....	$.78	....	....	.97	.61	....	.86	.91	.86	.91	....	.91	.88	....	.89
24-24.9	.72	.78	$.71	....	.80	....	....	.99	.63	....	.89	.94	.89	.94	....	.94	.91	....	.92
Below 25	....	....	....	$.73	....	....	....	....	....	....	....	....	....	....	$.73	....	....	....	....
25-25.9	.76	.80	.73	.75	.82	....	....	1.01	.65	....	.92	.97	.92	.97	.75	.97	.94	....	.95
26-26.9	.78	.82	.75	.77	.84	....	....	1.03	.67	....	.95	1.00	.95	1.00	.77	1.00	.97	....	.98
27-27.9	.81	.84	.77	.79	.86	....	....	1.05	.69	....	.97	1.02	.97	1.02	.79	1.02	.99	....	1.00
28-28.9	.84	.86	.79	.81	.88	$.72	$.67	1.07	.71	$.81	.99	1.04	.99	1.04	.81	1.04	1.01	$.61	1.02
29-29.9	.87	.88	.81	.83	.90	.74	.69	1.09	.73	.83	1.01	1.06	1.01	1.06	.83	1.06	1.03	.63	1.04
Below 30	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
30-30.9	.90	.90	.83	.85	.92	.76	.71	1.11	.75	.85	1.03	1.08	1.03	1.08	.85	1.08	1.05	.65	1.06
31-31.9	.92	.92	.85	.87	.94	.78	.73	1.13	.77	.87	1.05	1.10	1.05	1.10	.87	1.10	1.07	.67	1.08
32-32.9	.94	.94	.87	.89	.96	.80	.75	1.15	.79	.89	1.07	1.12	1.07	1.12	.89	1.12	1.09	.69	1.10
33-33.9	.96	.96	.89	.91	.98	.82	.77	1.17	.81	.91	1.09	1.14	1.09	1.14	.91	1.14	1.11	.71	1.12
34-34.9	.98	.98	.91	.93	1.00	.84	.79	1.19	.83	.93	1.11	1.16	1.11	1.16	.93	1.16	1.13	.73	1.14
Below 35	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
35-35.9	1.00	1.00	.93	.95	1.02	.86	.81	1.21	.85	.95	1.13	1.18	1.13	1.18	.95	1.18	....	.75	....
36-36.9	1.02	1.02	.95	.97	1.04	.88	.83	1.23	.87	.97	1.15	1.20	1.15	1.20	.97	1.20	....	.77	....
37-37.9	1.04	1.04	.97	.99	1.06	.90	.85	1.25	.89	.99	1.17	1.22	1.17	1.22	.99	1.22	....	.79	....
38-38.9	1.06	1.06	.99	1.01	1.08	.92	.87	1.27	.91	1.01	1.19	1.24	1.19	1.24	1.01	1.24	....	.81	....
39-39.9	1.08	1.08	1.01	1.03	1.10	.94	.89	1.29	.93	1.03	1.21	1.26	1.21	1.26	1.03	1.26	....	.83	....
40 and over	1.10	1.10	1.03	1.05	1.12	.96	.91	1.31	.95	1.05	1.23	1.28	1.23	1.28	1.05	1.28	....	.85	....

Market Record of Active Oil Stocks

Compiled by Carl H. Pforzheimer & Co., 25 Broad Street, New York City, Member New York Stock Exchange and New York Curb Exchange

New York Stock Exchange

1938-39 High	1938-39 Low	Week ending Feb. 11 High	Week ending Feb. 11 Low	Week ending Feb. 11 Close	Stocks—	Total shares outstanding	Par value	Latest dividend	Payable or last paid	Dividends paid in 1938	Com. sh. earn. 1937	Com. sh. earn. 1936	1937 High	1937 Low	1936 High	1936 Low
69½	61	63¾	61¾	62	Amerada Corp.	788,675	N.P.	50cQ	10-31-38	$2.00	$3.04	$2.52	111⅞	51½	125½	75
23½	21⅝	22¾	22⅛	22⅛	Atlantic Refining	2,663,999	$25	25cQ	3-15-39	1.00	3.51	2.59	37	18	35⅛	26⅝
21½	15⅜	18⅝	17⅝	17⅝	Barber Asphalt Co.	390,223	$10	75c	12-16-37	....	1.91	1.14	43⅜	10⅛	38½	21
19½	15½	16½	15⅞	15⅞	Barnsdall Oil Co.	2,250,344	$5	25cQ	2-1-39	1.00	0.85	1.01	35¼	10	28¼	14⅛
9¼	8	8½	8¼	8¼	Consolidated Oil Corp.	13,915,167	N.P.	20cQ	2-15-39	.80	1.48	1.18	17⅞	7	17¼	11½
31½	26¼	27¾	26¼	27¼	Continental Oil of Delaware	4,682,583	$5	25cQ	3-31-39	‖1.00	2.98	2.05	49	24	44⅞	28⅛
8⅜	6¾	7⅛	6¾	6⅞	Houston Oil (new)	1,098,618	$25	....	10-17-30	....	0.94	—0.03	17⅝	4¾	13⅞	6⅝
16½	13⅝	15	14½	14¾	Mid-Continent Petroleum	1,857,912	$10	35c	12-1-38	.60	2.86	2.57	35⅜	14	30⅞	17¼
17¾	10⅝	14	13½	13½	Mission Corporation	1,382,945	$10	$1	6-29-38	1.00	1.31	0.48	34	15	29⅞	16¾
15½	11⅝	13⅜	12½	12½	National Supply	1,155,170	$10	$2 pf.‡	12-22-37	....	4.90	2.02	41⅜	17⅝	75½	19⅞
10¼	8⅝	9⅛	8⅞	8⅞	Ohio Oil Co.	6,563,377	N.P.	20c	12-15-38	.20	1.30	0.70	22⅞	8	18	21⅛
15⅞	10¼	10⅝	10⅜	10⅜	Pacific Western Oil	1,000,000	N.P.	50c	12-20-38	.50	1.39	1.58	29¾	11¾	23½	11¾
9¼	6¼	..	..	..	Pan American Pet. & Trans.	4,702,945	$5	$1*	12-21-37	....	1.18	0.52	17⅛	7	20⅝	12¼
43¾	37⅛	40⅝	39	39½	Phillips Petroleum	4,449,052	N.P.	50cQ	3-1-39	‖2.00	5.42	4.02	64	30⅛	52⅜	33⅛
22½	20¼	21	21	21	Plymouth Oil Co.	1,029,800	$5	35cQ	12-12-38	1.40	2.85	1.65	29⅞	13	27⅝	11⅞
11¼	8¾	9½	9	9⅛	Pure Oil Co.	3,285,120	N.P.	25c	12-1-37	....	2.15	1.63	24⅜	8¾	27⅞	16
10¼	8⅝	9⅜	8⅞	9	Richfield Oil Corp.	3,896,638	N.P.	50c	12-21-38	.50	0.35	...	6½	4⅛	..	..
22⅜	19	20¾	20	20	Seaboard Oil of Delaware	1,244,383	N.P.	25cQ	12-15-38	1.00	1.97	2.00	54⅛	16	44	30½
15⅛	11¾	13¾	12⅞	13	Shell Union Oil	13,070,625	N.P.	35c	12-20-38	.70	1.44	1.57	34¾	14⅞	28¼	14¾
29½	21	24¼	23½	24	Skelly Oil	1,003,949	$15	50c	12-15-38	1.00	6.07	4.42	60⅝	26½	47⅜	19½
13⅜	12	12⅞	12½	12⅞	Socony-Vacuum	31,151,071	$15	25c	9-15-38	.50	1.82	1.38	23¼	13	17½	12½
29¼	26¾	29¼	27⅞	28¼	Standard Oil of California	13,014,754	N.P.	30cQ†	3-15-39	1.40	3.17	1.79	50	27⅛	47⅝	35
29⅛	26⅛	27¼	26⅞	27	Standard Oil (Indiana)	15,267,030	$25	25cQ	3-15-39	1.00	3.66	3.09	50	26½	48½	32¾
50⅜	32½	..	..	..	Standard Oil of Kansas	112,837	$10	$2	12-8-38	2.00	6.93	1.91	43	30⅝	31	25
53¼	47¼	50⅛	48¾	49⅝	Standard Oil of New Jersey	26,224,767	$25	50c§	12-15-38	§1.50	5.64	3.73	76	42	70⅜	51⅛
66	55	58½	58¼	58¼	Sun Oil	2,316,484	N.P.	25cQ	3-15-39	1.00	3.86	3.25	77½	44½	91	70
3¼	2⅝	2⅞	2¾	2⅞	Superior Oil Corp.	1,388,079	$1	....	.....	....	0.32	0.14	7¾	1½	6¾	3
48¼	42¼	44¾	43	44½	Texas Corp.	10,875,006	$25	50cQ	1-5-39	2.00	5.02	4.10	65⅛	34¾	55¼	27⅞
5¾	4⅝	5⅛	4⅞	4⅞	Texas Gulf Producing Co.	888,141	N.P.	15c	12-15-38	.15	0.68	0.93	9⅝	2	8⅞	4⅝
10⅛	8¼	9⅛	8¾	8⅞	Texas Pacific Coal & Oil	888,236	$10	10c	3-1-39	.40	1.11	0.72	16⅝	5⅝	15¼	7½
14⅛	12¼	13⅛	12¾	12¾	Tide Water Associated	6,369,175	$10	25cQ	3-1-39	1.00	2.08	1.03	21⅝	13⅛	21¾	14¾
19¾	18¼	18¾	18½	18½	Union Oil of California	4,666,270	$25	30cQ	2-10-39	1.20	2.58	1.40	28¼	17½	28½	20⅝
23⅝	21	22⅜	22	22	Union Tank Car Co.	1,200,000	N.P.	30cQ	3-1-39	1.30	1.70	1.76	31½	22	31⅝	22⅝
3⅝	3	3	3	3	Wilcox Oil & Gas	506,522	$5	....	5-10-28	....	0.24	—0.06	6¼	1¾	5¼	2¾

*Payable in 3½ per cent notes. †Includes extras. ‡One-tenth share $2 preferred stock. §Also 1½ per cent stock dividend. ‖Also right to subscribe to bonds.

New York Curb Exchange

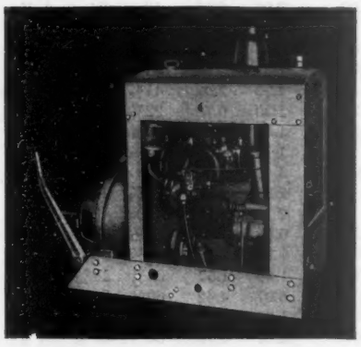
1938-39 High	1938-39 Low	Week ending Feb. 11 High	Week ending Feb. 11 Low	Week ending Feb. 11 Close	Stocks—	Total shares outstanding	Par value	Latest dividend	Payable or last paid	Dividends paid in 1938	Com. sh. earn. 1937	Com. sh. earn. 1936	1937 High	1937 Low	1936 High	1936 Low
9	7⅜	8⅜	8	8⅜	American Republics Corp.	1,308,049	$10	10c	7-11-38	$0.10	$0.27	$0.28	10	6⅝	..	..
7¼	5⅜	6	5¾	5¾	Bridgeport Machine Co.	260,000	N.P.	$1.25	12-30-37	....	1.90	1.26	21⅜	7	21	13¼
30⅜	27¼	29½	28½	29½	Buckeye Pipe Line Co.	200,000	$50	50c	3-15-39	2.00	4.02	4.40	51½	36	50	39¾
130	97	122	122	122	Chesebrough Mfg. Co.	120,000	$25	$2Q†	12-19-38	6.50	6.73	7.46	12	95½	124¾	105
9¼	6⅝	9¼	8¼	8½	Cities Service (new)	3,714,317	$10	....	6-1-32	....	1.02	0.13	5⅜	1½	7⅜	3
2⅜	⅞	1⅛	1⅛	1⅛	Cosden Petroleum	462,551	$1	....	.....	....	0.19	...	5½	1½	4½	1½
23¾	21½	22½	21⅞	22½	Creole Petroleum	6,975,383	$5	50cSA†	12-15-38	1.00	1.61	1.23	38¾	20¼	39	19⅞
7⅛	6¼	6½	6¼	6½	Darby Petroleum	351,390	$5	25cSA	1-15-39	.50	1.36	1.26	18⅝	6½	18⅛	9
2	1¾	1¾	1¾	1¾	Derby Oil & Refining	263,162	N.P.	....	.....	....	1.34	0.66	8⅜	2¼	6¾	1⅞
31	17⅛	..	..	..	Eureka Pipe Line	50,000	$50	50c	2-1-39	3.00	—0.12	—0.62	47½	24½	47½	38½
40	36	36½	36	36	Gulf Oil Corp.	9,076,202	$25	25cQ	12-15-38	1.00	3.51	2.90	63½	33	59	36
69⅜	64¾	66	64¾	65	Humble Oil & Refining	8,987,840	N.P.	62½c	12-27-38	3.00	5.22	3.80	87	54⅞	80	57
17	16	17	16½	16½	Imperial Oil of Canada	26,965,078	N.P.	62½cSA†‡	12-1-38	1.25	0.98	0.95	24¼	14½	24½	19¾
9⅜	6	6½	6½	6½	Indiana Pipe Line	300,000	$10	20c	11-15-38	.50	1.03	1.00	15	5⅞	9¾	5½
27½	24¾	26⅝	26¼	26⅜	International Petroleum	14,324,088	N.P.	$1.25†‡	12-1-38	2.50	...	1.81	39½	23½	39⅝	32⅝
5	2⅛	2⅞	2⅞	2⅞	Kirby Petroleum Co.	500,000	$1	10c	4-15-38	.10	0.17	0.20	8¾	2⅜	5⅜	2⅝
20¼	17½	18⅛	18	18	Lion Oil Refining	434,820	N.P.	25cQ	12-15-38	1.00	2.17	1.43	34	12½	17¾	7⅜
9½	8⅝	9⅛	9	9⅛	Lone Star Gas	5,553,747	N.P.	20c	12-22-38	.60	1.14	1.02	14¼	5¼	14¼	9⅞
7¾	6¾	7⅛	6⅞	7⅛	Louisiana Land & Exp.	2,977,449	N.P.	5c spl.	12-23-38	.45	0.58	0.64	15¼	6¾	15⅝	9⅞
8¾	8⅛	8¼	8⅛	8¼	Midwest Oil Co.	998,444	$10	50c	12-15-38	1.00	1.14	0.95	14⅝	6¼	..	..
5¾	4½	5¼	5⅛	5¼	Mountain Producers	1,593,584	$10	30cSA	12-15-38	.60	0.76	0.62	7⅞	4½	8⅝	5
13⅛	12	13⅛	13	13	National Fuel Gas	3,810,183	N.P.	25cQ	1-16-39	1.00	0.96	1.19	19½	12	23	17⅝
9¼	6½	7½	7½	7½	National Transit	509,000	$12.50	40c	12-15-38	.75	1.19	0.79	12½	7¼	15¾	9¼
2⅝	1½	1½	1½	1½	New Mexico and Arizona	1,000,000	$1	1c	12-1-37	....	0.02	0.02	5	1⅛	6⅝	1⅝
4½	3½	4	4	4	New York Transit	100,000	$5	15c	10-15-38	.25	0.49	0.34	5⅜	3⅞	6¼	4¼
6	4	4½	4½	4½	Northern Pipe Line	120,000	$10	15c	12-1-38	.35	0.78	0.66	12¾	5¾	9¾	4⅞
7⅝	5½	6¾	6⅜	6⅜	Pantepec Oil	2,441,142	$1	....	.....	....	...	0.05	9⅝	2¾	10⅛	3¼
4½	1⅝	1⅞	1⅞	1⅞	Root Petroleum Co.	336,045	$1	25c	2-1-37	....	—0.17	0.45	12¾	2	19¼	4½
3	2¼	2⅜	2⅜	2⅜	Ryan Consolidated	296,931	N.P.	....	.....	....	0.46	...	6½	2¼	4¾	1⅞
5⅜	3¼	..	..	..	Southern Pipe Line	100,000	$10	15cSA	9-1-38	.30	0.85	0.41	7¼	3⅞	7⅞	3¼
39	28¾	34	34	34	South Penn Oil	1,000,000	$25	37½cQ	12-24-38	1.75	4.64	3.59	56	35	44	32½
22¼	17	19	18½	18½	Southwest Penna. Pipe Lines	35,000	$50	50cQ	12-28-38	2.00	0.95	0.97	42	20	60	44
18⅝	17½	18⅜	18	18⅛	Standard Oil of Kentucky	2,604,790	$10	50cQ†	12-15-38	1.25	1.60	1.46	21⅛	14¾	23⅜	17⅛
6¾	6¼	6⅝	6⅝	6⅝	Standard Oil of Nebraska	166,403	$25	25c	3-29-37	....	—0.58	0.42	13¾	8	14⅝	11
22¾	16¼	..	..	..	Standard Oil of Ohio	753,740	$25	25c	3-15-39	1.00	3.67	4.77	45	16	40	21¾
2⅝	2	2⅝	2⅝	2⅝	Sunray Oil	2,006,176	$1	10c	12-24-37	.05	0.42	0.26	4⅞	2	5	2⅝
4	3¼	3½	3¼	3¼	Texon Oil & Land	936,024	$2	15cQ	9-30-38	.60	0.51	0.36	7⅝	2	9¾	5⅜
5⅛	4¼	4¾	4¼	4¼	Transwestern Oil Co.	750,000	$10	....	.....	....	0.48	0.06	13⅞	4⅝	..	..
3⅜	2¾	3⅛	2⅞	2⅞	United Gas Corp.	7,818,959	$1	....	.....	....	0.25	0.20	13⅞	3	10¾	4

†Includes extras. ‡Payable in Canadian funds. §Of which $1 was in preferred stock.

New or Improved Equipment

Le Roi Announces New Engine for Use in Shallow Fields

Supplementing its line of larger-sized valve-in-head pumping engines, Le Roi Co., of Milwaukee,



Wis., has announced a new line of small L-head units built for shallow-field work. These engines are available in three sizes for pump loads ranging from 2½ to 15 horsepower. Load ratings are based on unusually low piston speeds of 700 to 800 feet per minute. The illustration is a four-cylinder model recommended for loads of 6 to 9 horsepower.

Especially designed for oil-field service, Le Roi pumping engines have many interesting features. Of particular importance on the unit illustrated are the heavy-duty, twin-disc oil-field type clutch and power takeoff and the extra large bell housing enclosing a flywheel nearly twice as heavy as those ordinarily used, an important factor in the unusually smooth operation of Le Roi pumping engines. Bulletin PL describes the L-head line.

Assistant to Lucey President

Louis Waldo Baker, who abandoned banking for petroleum 10 years ago, has just been made assistant to the president in general charge of the business of Lucey Products Corp., according to announcement by Franklin E. Bernsen, president. Mr. Baker, who went to the First National Bank & Trust Co. of Tulsa in 1927, joined the Lucey organization in February, 1930, as assistant to the treasurer. He was made vice president in December, 1935, and was elected a director in December, 1938. He is a native of Illinois and was associated with the Farmers State Bank of Lawrenceville following his school work. He now succeeds John A. Chapman, who left the Lucey organization recently to join the Frick-Reid Supply Corp.

Here and There With Men Who Manufacture Equipment

The Mechanical Goods Division, United States Rubber Co.'s Baltimore branch, heretofore under supervision of the Philadelphia branch, is now an independent branch, under R. F. Jackson, as manager of mechanical sales.

Arcos Corp. of Philadelphia, Pa., has appointed the Ducommun Metals & Supply Co. of Los Angeles and San Francisco as its distributor of stainless and special alloy electrodes. Ducommun is carrying warehouse stocks from which West Coast users can obtain quick deliveries.

Arrow Supply Co., Inc., with general offices in the Sinclair Building, Fort Worth, Tex., has appointed R. R. Cowan, of Midland, Tex., as its resident manager at Hobbs, N. M. Mr. Cowan has been West Texas and New Mexico manager for Emsco Derrick & Equipment Co. for the past four years.

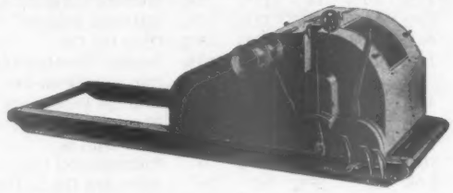
The Billings & Spencer Co., Hartford, Conn., manufacturer of Billings forged tools, has appointed W. D. Endres sales manager in charge of the merchandise tool division, succeeding W. Roy Moore, who resigned. Mr. Endres, a graduate of Northwestern University, has been divisional manager in Chicago.

The reputation of Unibolt couplings for withstanding high pressures and high temperatures has spread outside the oil industry. According to Thornhill-Craver Co., Houston, Tex., manufacturer, the design of the Union Pacific Railroad's new streamline steam turbine train calls for Unibolts on its steam lines.

D. J. Reese of the development and research division of the International Nickel Co., Inc., was chairman of the combined meeting of the Worcester (Mass.) chapter of the American Society of Metals and the New England Foundrymen's Association, held at Worcester Tech. February 8.

Bridgeport Machine Offering Light, Compact Drawworks

The Gumbo Buster FC-200 unit drawworks, recently placed on the market by Bridgeport Machine Co., of Wichita, Kans., is a small, compact drilling machine especially designed for use with internal-combustion engines. It can be operated with one or more engines. A single engine can be



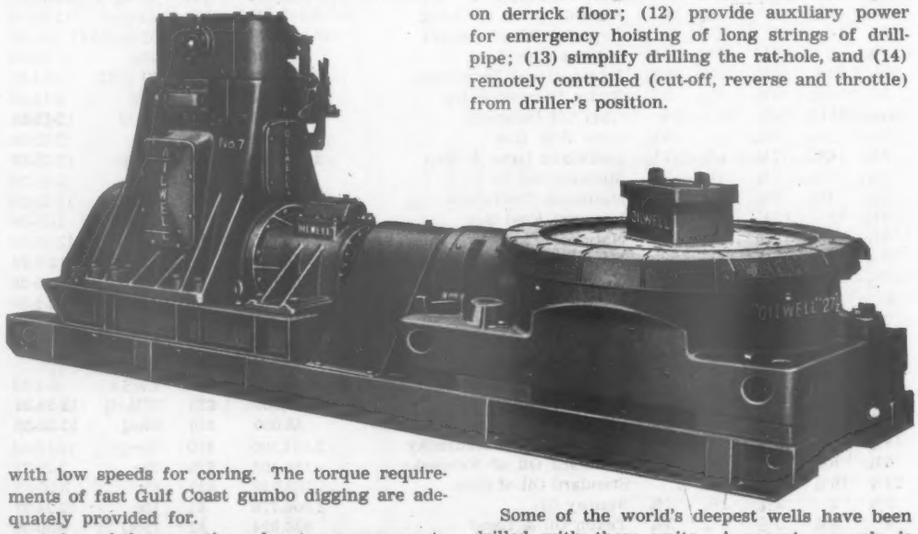
connected to the unit by means of cut sprockets and roller chain or by Texrope pulleys and belts. When two engines are used they can be compounded and the power of both engines can be transmitted to the drawworks by means of either Texrope belts or roller chain.

Four forward speeds to the cathead, the drum and the rotary table and one to each in reverse are engaged by friction clutches, with the four forward speeds connected to one operating lever. Any one of the four speeds can be imparted to the drum, rotary and cathead without the necessity of varying the speed of the engines. While light-weight, the manufacturers say it will safely transmit a maximum of 200 horsepower and is suitable for shallow as well as medium-depth drilling. Specifications and complete description are given in Rotary Machinery Bulletin No. 30.

OIL WELL OFFERING COMPACT, TWO-SPEED ROTARY UNIT

Oil Well Supply Co.'s No. 72715 and No. 7272 rotary drilling units feature a two-speed drive and more compact arrangement, the gearbox being directly attached to the frame of the "Oilwell" No. 7 vertical engine. The two-speed transmission facilitates maintaining moderate and efficient engine speeds for both high and low table speeds. This feature is especially desirable where high rotating speeds for drilling must be alternated with low speeds for coring. The torque requirements of fast Gulf Coast gumbo digging are adequately provided for.

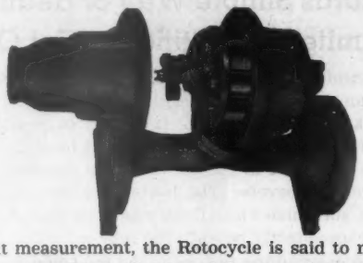
A few of the operating advantages common to all "Oilwell" rotary drilling units are: (1) Eliminate wear and replacement of rotary chain and sprockets; (2) provide an effective means for "drilling up" (rotating while hoisting slowly); (3) reduce wear and tear on rotary, hoisting engine and hoist; (4) eliminate chain noise; (5) save fuel and feedwater; (6) reduce lubrication expense; (7) save time in "breaking out"; (8) make spudding easier and more effective; (9) give the driller accurate control of the drillpipe and bit; (10) reduce danger of twistoffs; (11) save space on derrick floor; (12) provide auxiliary power for emergency hoisting of long strings of drillpipe; (13) simplify drilling the rat-hole, and (14) remotely controlled (cut-off, reverse and throttle) from driller's position.

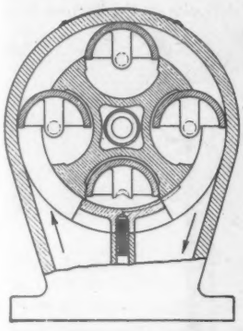


Some of the world's deepest wells have been drilled with these units. A recent example is Union Producing Co. No. 1 Minnie Brown, the deepest well in Texas, drilled to 13,728 feet.

Rotocycle Meter Designed for Pipe-Line Service Primarily

The Rotocycle meter, recently introduced by Pittsburgh Equitable Meter Co., Pittsburgh, Pa., is designed primarily for pipe line service. Described as a new development in positive displacement measurement, the Rotocycle is said to measure accurately at all rates of flows, under varying pressures, specific gravities and viscosities. The meter is designed to withstand shocks and strains imposed by pipe-line pumping. It is self-cleaning and paraffin deposits on the working mechanism do not affect its accuracy. The oil flows as a continuous streamlined cycle with no appreciable loss in pressure.





The operating mechanism consists entirely of rotating parts. The meter consists of an elevated cylindrical housing with inlet and outlet ports so designed that the flow of oil moves in an unrestricted path. These two ports are separated by a division plate at the bottom of the body so that the liquid can flow in only one direction. The entire mechanism is elevated above the pipe line so that oil enters at the bottom, flows around the measuring-chamber and out again at the bottom of the chamber.

The rotor or measuring element of the meter is a cylinder carrying four half-moon shaped buckets equidistantly spaced on its outer circumference and geared together in a ratio of one to one on top of the rotor. As the rotor turns, the position of these buckets with relation to the side walls of the measuring chamber varies, always, however, so that two buckets are in contact to form a closed compartment. The volume in this compartment is a definite displacement and a certain number of these displacements are counted and recorded on the register for every barrel or gallon passing through the meter.

Caterpillar Offers Attachment for Natural Gas Conversion

A natural gas conversion attachment, quickly applicable to all six-cylinder, 125-horsepower "Caterpillar" Diesel engines, has been announced by Caterpillar Tractor Co., Peoria, Ill. In addition, the full-sized, full-weight D13000 Diesel engine is being offered already converted for burning natural gas, if desired.

"Caterpillar's" conversion attachment is characterized by simplicity. To change from Diesel to natural gas the pistons do not have to be touched, nor do any changes have to be made to interior parts of the engine.

The Diesel cylinder-head is removed, and with it the injection valves and lines. These are replaced by a special head, lowering the compression and providing spark-plugs. The Diesel fuel injection pumps are also replaced by a magneto, and a carburetor is added to the intake air line. The entire process takes about four hours, and can be conveniently done in the field. To change back again to Diesel fuel is equally simple.

As might be expected by the fact that the D13000 is made convertible, the power characteristics of the engine converted to gas are essentially the same as the characteristics when the engine is operated as a Diesel.

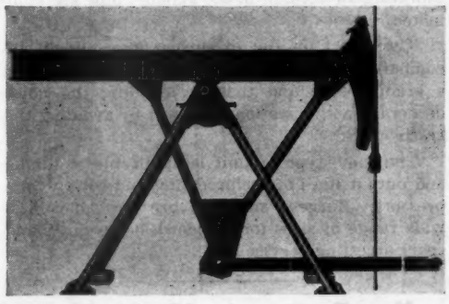
Conversion parts are delivered in an especially constructed box, partitioned so as to hold all replaced parts, and give them a clean storage space while not in use. A similar conversion will soon be available for the D17000, 160-horsepower, V-8 engine.

Straight-Lift Underpull Jack Is Built to Give Long Service

Allied Steel Products Corp., 1407 North Peoria Avenue, Tulsa, in announcing its straight-lift underpull jack, says the knowledge and experience of many production engineers and superintendents were utilized to assure correct design. The jack is said to give long life of economical and dependable service. Straight lift is gained by three centers of adjustment, which apply individually to beam-head assembly, horsehead and wire lines.

General construction is of controlled production. The unit is electric-welded throughout. Assembly is manufactured on specially designed, permanent jigs and fixtures.

Literature descriptive of the Allied straight-lift underpull jack is really a handbook of surface pumping. There is information on production methods, relative costs and equipment. Charts give detailed data on rod stretch, etc. The book offers information enabling the buyer to choose the equipment for every pumping need.



Latest Model Emergency Jack Is Handy Tool for Oil Field

Templeton, Kenly & Co., Chicago, manufacturers of Simplex screw and ratchet jacks, have started production on an improved model of their No. 310 15-ton Emergency jack called No. 310A.

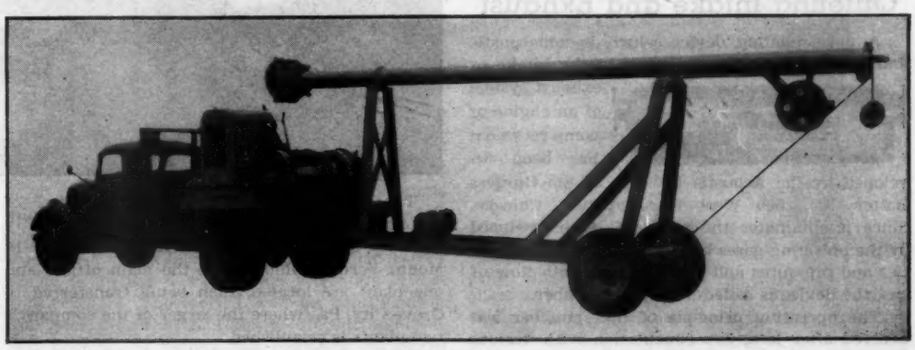
This new jack embodies 10 improvements, several of which are exclusive features, the makers state. They include 1 inch greater lift, a total of 14 inches; 37 per cent easier lifting; triple-toothed lifting and retaining pawls; greater overload capacity by actual hydraulic press test; jack-base area increased 10 square inches; rack-bar toe-lift increased to over 2 square inches; load may be raised or lowered full limit of the rack-bar when working at an angle; base locking hook can now be disengaged or engaged by the operator's foot; more convenient carrying handles.

New Oil Tool Company Formed

H. W. Hake, for the past seven years sales manager for Emsco Derrick & Equipment Co. in Mid-Continent oil fields, has resigned to engage in the manufacture of specialties for the oil industry. The new company, operating as Hake Tool Co., will be located in Houston, Tex.

TELESCOPING PIPE MAST IS TOWED BY LEASE TRUCK

The Allsteel Products Manufacturing Co., of Wichita, Kans., is offering a telescoping pipe mast, 44 or 55 feet in height when fully extended. This mast is mounted on a trailer which can be towed behind a lease truck and used with any servicing hoist. The mast is raised and extended by means of a manually operated winch. The sheave at the bottom of the mast is optional. It is desirable if it is necessary to operate the servicing hoist at some distance from the well, due to fire hazard. The mast can be raised and guyed, then the trailer removed for servicing operation. The mast lower section is 8⅝-inch steel casing and the telescoping upper section is 7-inch steel casing, with ladder stirrups on the lower casing. The upper section can be locked in lowered or elevated position. Guy lines can be attached at the top of the lower section and the top of the telescoping section.



SMITH METER CO. IS NOW OCCUPYING ITS NEW PLANT

The new plant of the Smith Meter Co., equipped for volume production and providing needed room for expansion, has been completed at 5140 East Leneve Street, East Los Angeles, Calif., and is now occupied by the company, which manufactures a

line of rotary-action, positive-displacement type of petroleum meters. The new structure is of steel and stucco construction. Scientifically improved artificial lighting is provided for use when needed, while window lights and skylights of special glass give efficient diffusion of daylight for the precision work essential to the construction of Smith meters. General offices and research division are housed in an adjoining two-story portion of the new building.

In addition to this large unit, the company will continue to maintain its meter laboratory at the old Fishburn Street address in Los Angeles, where, according to present plans, machine-shop facilities will be retained for the building of experimental meter models. The Smith Meter Co. is a subsidiary of the A. O. Smith Corp. of Milwaukee, Wis.

Huge Hole-Opener Is Made for Use in California Oil Fields

A 24-inch four-point hole-opener recently manufactured by the H. C. Smith Oil Tool Co., Comp-

ton, Calif., and weighing 1,600 pounds, was used in opening an 18⅝-inch hole to 24 inches in the new Aliso Canyon oil field near Chatsworth. This hole-opener is the largest ever manufactured by the company for use in a California field. The size of the hole-opener is seen by comparison with the men standing on each side of it.

Burgess Introduces Device for Quieting Intake and Exhaust

A noise-quieting device which is nonacoustic and can be placed at any point in the intake or exhaust system of an engine or compressor, has been developed by the Acoustic Division of the Burgess Battery Co., 500 West Huron Street, Chicago. Since it eliminates the cause of noise produced by the pulsating gases by snubbing the peak velocities and pressures and produces a smooth flow of gas, the device is called a Burgess snubber.

The operating principle of the snubber was evolved after long experimentation with various types of engines, using piezo-manometers and recording oscillographs to determine the transient pressures and velocities within exhaust manifolds immediately after opening of the exhaust valve.

The effect of the Burgess exhaust snubber is to prevent the sudden impact of the slug of vented gas with the atmosphere and also to stop the usual inrush of air into the exhaust pipe after the discharge of the slug. Therefore, the sharp noise of the slug impact and the rumbling noise of the vibrating air column in the exhaust pipe are eliminated.

The effect on the exhausted gases might be compared with that of braking an automobile to a gradual stop and thereby avoiding the noise of a crash with a stationary object by avoiding the crash itself.

The same type of unit is applicable to intake and output lines of reciprocating and rotary compressors. Burgess snubbers are available in a wide range of sizes for standard, heavy-duty, and spark-arresting service.

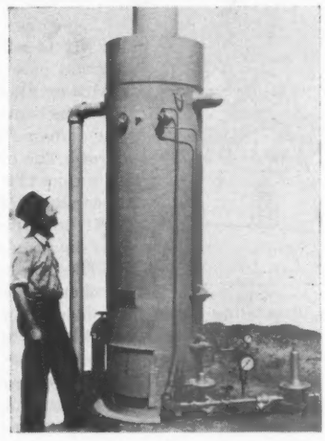
New Territory for Mission Men

Allan Nelson, formerly with headquarters in Tyler, Tex., as Mission Manufacturing Co. representative for East Texas, has been transferred to Oklahoma City. From there he will serve Kansas and that part of Oklahoma north of Ada. Fred S. Price, with headquarters in Wichita Falls, Tex., will serve, in addition to his present territory, that part of Oklahoma south of Ada.

Affords Simple Way of Heating Limited Quantities of Cut Oil

An improved vertical treating heater is one of the latest developments of Black, Sivalls & Bryson, of Oklahoma City, Okla. It is said to provide a practical and inexpensive method of heating moderate quantities of cut oil where the requirements are not too severe. The heater has vertical fire-tubes, surrounded by a fluid, which are heated from a firebox directly beneath the tubes.

An outstanding feature is the mud-ring section surrounding the firebox. Incoming fluid is admitted near the bottom of the mud-ring to assist in preventing sediment deposits on the bottom flue-



sheet. For cleaning the mud-ring section and bottom flue-sheet, cleanout handholes are provided. The vertical heater, small and compact, requires little space. If set on firm, level ground, no concrete base or piers are necessary. It gives satisfactory service, the manufacturers say, when the fluid to be treated contains no corrosive, lime, or salt-forming properties.

COOPER - BESSEMER MEN ATTEND FIVE-DAY CONFERENCE

The Cooper-Bessemer Corp., manufacturer of gas and Diesel engines and compressors, recently held its annual sales conference, beginning in Mount Vernon, Ohio, where the main offices and one plant are located, then being transferred to Grove City, Pa., where the larger of the company's two plants is established.

Managers and sales engineers from each of the company's district offices were on hand for General Sales Manager T. F. Hudgins' opening call to order at Mount Vernon. At a dinner that evening Col. James Mess, of Diesel Power, Ltd., agent for Cooper-Bessemer products in Toronto, Canada, gave the 55 guests an account of the better trade outlook between Canada and the United States.

The next day the entire group entrained for Grove City. Dinner was served en route in a special dining car. Meetings were resumed, and C. J. Stilwell, vice president of the Warner & Swasey Co., Cleveland, Ohio, was honor guest and speaker at a banquet. Among the features of the five-day program was an address by O. A. Smalley, president of the Meehanite Metals Corp., and a foundry demonstration of Meehanite metal being made and cast.

Statue Unveiling to Be Feature of Goodyear's Anniversary

Celebrating the hundredth anniversary of the discovery of vulcanization by Charles Goodyear and the fortieth anniversary of their company, representatives of the mechanical goods division of the Goodyear Tire & Rubber Co., will be guests at the Akron, Ohio, factories February 20-23, to participate in a homecoming.

Highlights of the combined homecoming and centennial celebration, which is expected to be attended by 2,000 Goodyear sales representatives from all parts of the world, will be: Unveiling and dedication of a statue of Charles Goodyear in front of Akron City Hall, memorializing vulcanization's discovery; a "rubber world's fair" of rubber products and historical materials in Goodyear Hall, and a civic dinner sponsored by the Akron Chamber of Commerce for 1,600. Nationally known speakers are to take part in the celebration.

The picture shows Walter Russell, sculptor, applying the finishing touches to the statue in memory of Charles Goodyear, to be unveiled in front of Akron's city hall, February 23, 1939.

Huber Now Manager of Sales

The appointment of W. A. Huber as manager of sales of the Gilmore Wire Rope Division of the Jones & Laughlin Steel Corp., of Pittsburgh, Pa., has been announced. The new and modern plant of this J.&L. unit is at Muncy, Pa., and Robert Gilmore is general manager of the division.

Mr. Huber has been with Jones & Laughlin since 1936. Before that time he had been in public accounting and sales work for a number of years.

Bulletins, Booklets, and Other Literature for the Trade

Westinghouse Electric & Manufacturing Co., Nuttall Works, Pittsburgh, Pa., is supplying loose-leaf bulletins on Types SH and DH speed-reducers and Westinghouse gearmotors to be substituted for those previously issued.

A broadside issued by Marmon-Herrington, Inc., Indianapolis, Ind., presents the all-wheel drive Ford V-8, which is described as having "all the effective tractive power of two ordinary trucks in one sturdy chassis."

Recent findings on the hardenability of steel are given in a new book, "U.S.S. Carilloy Steels," published by the Carnegie-Illinois Steel Corp. The book discusses the hardening of steel. The practical aspect is based on hardening behavior when steel bars are quenched in various quenching media and represents recent work in the company's laboratories. The description of fundamental behaviors is a result of research carried on in the United States Steel Corp. research laboratory. Copies can be obtained from the Carnegie-Illinois Steel Corp., Pittsburgh, Pa., or Chicago. The price is $1.

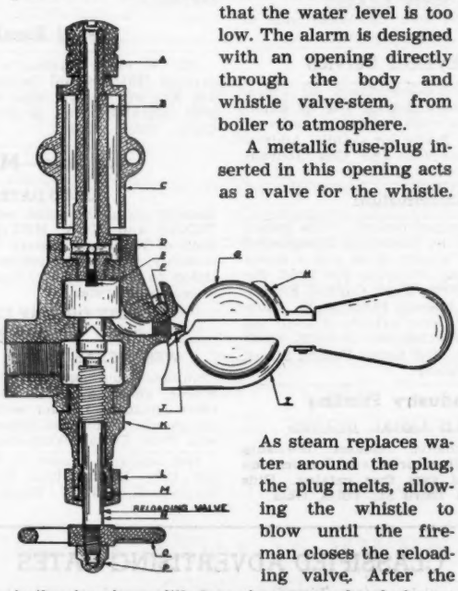
The Jarecki Manufacturing Co., Tulsa, has a new bulletin, No. 5, describing the Jarco roller pullrod-carrier, which explains the construction and use of this carrier for supporting surface pullrods in oil-field service.

A. M. Byers Co., Pittsburgh, Pa., has issued a 56-page wire-bound general catalog of its products, which include wrought-iron line pipe, casing, tubing, drivepipe, couplings, etc., and wrought-iron flat-rolled products. It embraces also a line of welded steel tubular products which the company has developed in recent years to meet requirements where corrosion is not an important factor.

Whistle Warns Fireman When Water in Boiler Is Too Low

The Hunt Tool Co., Houston, Tex., has introduced the Red Top low-water alarm, a safety appliance for use on boilers, to warn the fireman that the water level is too low. The alarm is designed with an opening directly through the body and whistle valve-stem, from boiler to atmosphere.

A metallic fuse-plug inserted in this opening acts as a valve for the whistle.



As steam replaces water around the plug, the plug melts, allowing the whistle to blow until the fireman closes the reloading valve. After the boiler has been filled to the proper level the reloading plug is inserted in the valve-stem by unscrewing the whistle.

Automatic fuel cut-off valves may be installed in conjunction with this valve, the manufacturer states. All inquiries concerning this new product should be directed to the Hunt Tool Co.

Haering in Larger Quarters

D. W. Haering & Co., Inc., has removed its production facilities to new and larger quarters at 2308 South Winchester in Chicago. Alterations and installation of equipment in the two-story factory building were to have been completed this week. Production facilities and control laboratory are to be in the new building. Executive offices and research laboratories will be continued at 3408 Monroe Street in Chicago. Recent additions and promotions among the company personnel include the appointment of R. C. Rohrdanz, B.S., as resident engineer in Houston, Tex.; Ellis Pardee, B.S., to the laboratory staff in Wichita, Kans., and Ralph Beardsley, B.S., and George Thompson, B.S., to the Chicago laboratory staff.

Tests Show Weco Derrick Belt Has Wide Margin of Safety

The Well Equipment Manufacturing Corp., Houston, Tex., has placed on the market a new safety product, the Weco (Lewis) derrick belt. It is made in two types, snap-on and buckle type, the former of which is shown in the illustration. The general features of design and construction of the two types are the same.

This safety belt, according to the manufacturer, is made of the best grade of woven webbing, for strength and to retain pliability and cleanliness. All stitches are sewed with heavy waxed linen thread, and copper rivets are placed at all points of strain. Heavy wrought- and forged-steel fittings are furnished for both snap-on and buckle types, or heavy galvanized and cadmium-plated material, for resistance to oil, salt water, etc. Drop tests from derricks have been made to prove the margin of safety.

Two means of escape are provided, through the snap at the front, or at the waist adjusting buckle at the side. Any desired change in shoulder or waist adjustment can be made without the wearer removing the belt while on the job.

Improved Type of Ideal Swivel Offered by National Supply

The National Supply Co. has recently introduced an improved design of the Ideal 4-inch Type GS swivel. This new lightweight swivel, designated as the 4-inch Type GSB, is offered for moderate-depth drilling. The main bearing is of the cone-roller type, and it operates in an oil bath. An improved feature is the tapered roller bearing mounted above the main bearing, which takes both the radial load and the upthrust.

Elimination of packing problems is said to be assured by the use of automatically adjusted packing for the washpipe stuffing-box and the lower body stuffing-box. Packing off of the sleeve at the bottom of the body is accomplished by two oil seals. The washpipe packing is Ideal V-ring type which the manufacturer says provides a positive seal against leakage.

The GSB swivel has a 2¼-inch diameter weldless forged-steel bail which is attached to 3⅜-inch diameter trunnions formed integrally with the upper half of the two-piece body. The sleeve has a 2-inch diameter fluid passage, and it has a tapered thread at the lower end to accommodate the coupling.

This swivel can be furnished with a bracket for mounting a rubber bumper against which the elevator links may rest, a feature which reduces wear on the links.

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Patents obtained — infringement practice in all Courts—oil field experience. 1807-11 Tower Petroleum Bldg., Dallas. 2014 Second Nat'l. Bank Bldg., Houston. 707 Insurance Building, San Antonio. 433 Munsey Building, Washington, D. C. Address any of these offices.

Leases and Drilling Blocks

LEASES—East Texas, La., South Ark. 20 acres up, dollar acre up.—Owners—Address Attorney, Box 1122, Little Rock, Ark.

DRILLING deals wanted 50,000 acres Southern Illinois in and around production area. Elmer Gant, Anna, Illinois.

ILLINOIS 60,000 acres in and near production. Illinois Minerals Company, Cairo, Illinois.

SACRIFICE 40-acre Oil Lease, Chaves County, for only $10.00, full price. Guarantee title. P. O. Box 191, Clovis, N. Mex.

320 ACRES, Crane Co., Tex., Magnolia lease, cheap in fee. Address 415 Littlefield Building, Austin, Texas.

OIL and Gas Lease For Sale. My one-half interest in 204 A. Sec. 7. 4N. 6W. Grady Co., Okla. Also, 240 A. Sec. 14 and 15, 2N. 4W. Stephens Co., Okla. E. E. McDowell, Verden, Oklahoma.

5 ACRE Mineral Deed, Landowners Royalty under entire 80 acres of land leased to Gulf Oil Co. being N½ NW¼ sec. 30, twp. 14s, rge. 31e, full price only $32.50. Perpetual and full participating. Send your check. Guarantee delivery. P. O. Box 968, Hobbs, N. Mex.

WILL GIVE solid 600 acre block leases Breckenridge County, Kentucky for test well 1,250 feet deep or McClosky sand if productive anticipated at lesser depth. Address Owner. GUY J. STUMPFF, Box 1657, Fort Worth, Texas.

WILL GIVE genuine psychic maps showing drilling sites MONTGOMERY COUNTY, MISSISSIPPI to operator who will drill. Texas operators leasing near Kilmichael, Miss. Ideal shore line structure found, 4 oil sands less than 3,500 feet. No proration. Box 303, Memphis, Tenn.

We Can Turn Your Oil Deal Or Get You a Deal
We like the big ones best. Save commissions. Send no information. Just your name and address to: THE BROKER, 906 Tulsa Loan Building, Tulsa, Oklahoma.

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Just drilled quarter million gas on 80 acres. Will drill one more, assign lease, 2 wells, $1400.—160 acres on gas pipeline; drill one well, assign $900.—2000 acre block proven, big gas, oil. Assign for drilling contract. Buddenborg, Osawatomie, Kansas.

Leases and Drilling Blocks

NEW MEXICO
State Oil and Gas Leases
Forty acres and multiples thereof at $6.00 to $30.00 per forty in the Hot Spots. Buy where the major companies own leases. Write for list. Twenty years in the business and not a complaint.
HARRY S. WRIGHT
New Mexico State Lessee, P. O. Box 166, Council Bluffs, Iowa, or P. O. Box 347, Santa Fe, N. M.

LEASES—ROYALTIES near Ordovician and Woodbine-Trinity sand wildcats. Quick plays for 50 to 1 chances. E. CROFT, PROCTOR, TEXAS.

OWNER thousand acres of E. Okla. productive coal oil gas land; $15 fee, half cash, bal. in royalty, or $5 per a. lease or royalty. J. E. Cavanagh, Baker, Oregon.

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WANTED: Partially developed or offset leases for immediate drilling. New Mexico preferred. Send full information to Box J-860, The Oil and Gas Journal, Tulsa, Oklahoma.

HOT SPOT LEASES
North Mo. $1.50 acre up. Some mile of well. Box 152, Milan, Missouri.

Geophysical Service

THE USE OF geochemistry is a most logical means of attacking the oil exploration problem. Soil analyzing surveys are reasonable. Write for details. Address Box J-870, The Oil and Gas Journal, Tulsa, Oklahoma.

Information

MY mimeographed bulletin, "The Money Market Offered by Insurance Companies" with list of 83 leaders $3.00 was a scoop. Government now studying the field! Another scoop, "New Type Capital Financing by Banks," bulletin form, $1.00. America's 72 leading underwriters of securities who bought $800,000,000 in 1938 $3.00. JOHN MORRIS, 1040 South Paxton Street, Philadelphia, Penna.

Oil Industry Printing

OIL FIELD LEGAL BLANKS
Leases, assignments, releases, township plat books, well records, etc. Request on your letterhead gets free catalog. Olds Press, 215 East Third St., Tulsa, Okla.

Situations Wanted

DESIRE connection with company or individual developing oil property, operation or installation of natural gas plant as employee or partner. Graduate engineer, 20 years' operating experience, 4 years with state service Comm. Address Box J-832, The Oil and Gas Journal, Tulsa, Okla.

PET. Engr., married. Some experience with oil companies in Mid-Continent fields. Address Box J-871, The Oil and Gas Journal, Tulsa, Oklahoma.

SALES ENGINEER
Mechanical graduate, 15 years' experience equipment and steel products. Familiar with field and manufacturers' problems. Address Box J-872, The Oil and Gas Journal, Tulsa, Oklahoma.

Help Wanted

WANTED: Manufacturers' Representative with experience in selling Valve Cups. Must be active and have good connections with western supply stores and oil companies. Give full particulars. Address Box J-861, The Oil and Gas Journal, Tulsa, Oklahoma.

WANTED: Salesman, experienced in selling pumping units and surface equipment, to fill the position of Sales Manager. Address Muskogee Iron Works, Muskogee, Oklahoma.

Legal Blanks

SINCE 1908 Burkhart's legal forms—serving Mid-Cont. oil fields, including Ill., La. Mo. Ind. & Ky. Free catalog & samples. Burkhart Ptg. & Sta. Co., 115 So. Cinn., Tulsa, Okla.

For Sale—Maps

UP-TO-DATE
County ownership and oilfield maps in TEXAS and NEW MEXICO. WILDCAT MAP of Texas and eastern N. M. published monthly, shows all wildcats drilling in relation to proven fields. Single copy $3.00. Subscription rates.
ZINGERY OIL MAP COMPANY
Fair Bldg. Fort Worth, Tex.

WEST TEXAS HANDY OIL MAPS
Complete coverage on all West Texas Fields, showing operators, farm names, total depths and exact well locations. $10 per month. Individual maps 50 cents each. Box 2519, Tulsa, Oklahoma.

OIL and Gas Leases, N. E. Kansas, Forest City Basin—Maps $1.00. Margaret Haynes, R. # 3, N. Topeka, Kansas.

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ANDREW J. BARRETT
The Philtower
Tulsa, Oklahoma.

Brokers—Salesmen

Sell in the most active area in the United States—The Permian Basin of West Texas and Southeastern New Mexico. From the standpoint of royalty investors this area has much to offer. Can supply you with choice non-producing royalties located on geophysical highs. Also drilling blocks, close in acreage to production, or wildcat leases. I maintain my own field men who cover this area for me. All offerings meet the requirements of the Security and Exchange Commission. Inquiries invited.

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OIL ROYALTIES
Registered Dealers Only.
GRIMES ROYALTY CO.
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PRODUCING OIL ROYALTIES
15 years of experience.
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Survey Service

OIL FINDING DOWSING METHOD
My deductions a practical method which picks up vibratory reactions emanating from carbo-hydrates. Physico method finds oil, locates faults. Same method discovered great East Texas field also our Watson #2 first producer Wilmington, Calif. field. Employ a man that owns producing wells. I find oil if it exists or no charge. George Miller, 1548 Post, Torrance, California.

Contractors

NORTHWEST Missouri—We have light, modern, all-steel, truck mounted spudders for shallow information holes to marker limes in Forest City basin. Drillers familiar with formations. Office close to area. Also have spudders for deep wildcat holes. References. J. D. Judd & Son, Martin City, Mo. 6 miles south of Kansas City on Holmes St. Phone Dwight 3273.

WE will contract your Ditching and Bulldozer work. Also have Pipe Line Equipment for rent or sale. Kova Pipe Line Co., 503 Tradesmen Bldg., Oklahoma City, Okla.

For Sale

BENTONITE FOR SALE
Large deposit high grade bentonite located on main line C.B.&Q. R. R. Weston County. Wyoming. This is standard Eastern Wyoming type material, used as Rotary oil and gas well drilling mud, as a bonding and revival agent in foundry sands, meets all requirements for the newly discovered indestructible paper known as alsilfilm.
ADDRESS: L. F. Fletcher, Box 155 Moorcroft, Wyo.

Mailing Lists

ROYALTY Lists. Unit Owners Lists. Stockholders Lists. By states. Oil Industry Mailing List Co., Tulsa Loan Bldg., Tulsa, Oklahoma.

Financing

CAPITAL SEEKERS—Put your project before 260 Key-Men. Cost trifling. Details free. AMSTER LEONARD, Fox Theater Building, Detroit, Michigan.

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Classified advertising rates: First insertion, 35 cents a line; each additional insertion, 25 cents a line, PAYABLE IN ADVANCE. Six words usually make a line. Count as a word each one-letter word and each group of figures. White-space computed at regular line rate. Allow two extra lines for blind ads. Ads of less than three lines not accepted. No formal acknowledgement is made, and proofs cannot be shown in advance of publication.

	1 time	2 times	3 times	4 times		1 time	2 times	3 times	4 times
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4 Lines	1.40	2.40	3.40	4.40	8 Lines	2.80	4.80	6.80	8.80
5 Lines	1.75	3.00	4.25	5.50	9 Lines	3.15	5.40	7.65	9.90
6 Lines	2.10	3.60	5.10	6.60	10 Lines	3.50	6.00	8.50	11.00

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Classified Display is set with a border and may be used in one or two column sizes.

1 Inch	1 time	$5.00
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1 Inch	52 times	3.50 per inch

This space may be contracted for over a period of one year from the date of the first insertion and is PAYABLE IN ADVANCE, MONTHLY.

We reserve the right to withhold all advertising of questionable character. To avoid delay be sure to send remittance with copy. We will set your ad in the smallest amount of space possible and refund all overpayments. One-time insertions will not be run until fully paid. Forms close MONDAY NOON before each issue date.

THE OIL AND GAS JOURNAL
Tulsa, Oklahoma

CLASSIFIED ADVERTISING

For Sale—Equipment For Sale—Equipment For Sale—Equipment

PRESSURE VESSELS

We have recently purchased several pressure vessels, that would make excellent reaction chambers, any type tower or for pressure storage.

We also have SEVEN, 6'x28'x¼" riveted and welded vessels for gasoline storage.

PIPE—STEEL STORAGE TANKS—VALVES and FITTINGS
REFINERY EQUIPMENT

SONKEN-GALAMBA SUPPLY COMPANY

W. C. Berry or H. J. Galamba,
Riverview at Second, Kansas City, Kansas

Robt. W. Duden,
2100 S. Union, Tulsa, Oklahoma

Exceptional Value!! Motor Rig

2—190 H.P. Waukesha Motors.
1—Jack Shaft Draw Works.
1—6 x 16 Wilson Snyder Pump.
1—200 Ton Roller Bearing Crown Block.
1—200 Ton Roller Bearing Traveling Block.
1—8 inch enclosed rotary hook.
1—20 inch roller bearing table.
1—6" Swivel.
4500 ft.—4½" Grade "D" seamless 16.60 lb. full hole drill pipe.
1—Weight Indicator.
1—4½ x 38' Kelly joint.
1—6¼ x 26' Drill Collar.
1—Steel Tool House.
1—5 K. W. Light Plant.

Other items too numerous to list here. Price complete, $28,500.00. Rig can be seen at the

Melton Supply Co.
Seminole, Okla.

BUDA MOTOR
90 H.P. Like new, only $275.
R. D. JAMESON, La Cygne, Kansas.

DISMANTLING REFINERY

Have purchased refinery of Valvoline Oil Co., Warren, Pa. Selling all equipment and land of this huge plant.

WAYLAND RUPERT
Vandergrift Bldg., Pittsburgh, Pa.

"FAILING Core Drill, 1938 Model 44." Ford mounted cost $12,000, price $6,800. Write Box 662, Brownwood, Texas.

FOR SALE at Bartlesville: 1—2A National Drilling Machine, I. T. I. O., Bartlesville, Oklahoma.

25 K.W. and 40 K.W. Gas Engines, 220 volts, D.C. Two 100 K.W. Gas Engine-Generator Sets, 220 volts, D.C. 7x6 Ingersoll-Rand ER-1 Air compressor. Six-inch Oster Pipe Threading Machine. Also large stock of lathes, pipe machines, milling machines, etc. Send for our list.
Terms to suit.
CINCINNATI MACHINERY & SUPPLY CO.
26 West 2nd St. Cincinnati, Ohio.

A GOOD HABIT

The Classified Section of The Oil and Gas Journal is a most excellent medium of exchange for every commodity and service pertaining to the petroleum industry.

Form the habit of referring to these columns to get in touch with bargains in leases, royalties, production, second-hand equipment; with business opportunities and efficient help. Many ads worthy of your investigation appear in this section every week.

You can find what you want—quickly—if you—

CONSULT THE CLASSIFIED ADS

THE OIL AND GAS JOURNAL
TULSA, OKLA.

For Sale—Equipment

FOR SALE: One complete steam rotary rig with 4" drill pipe, 90 H.P. Broderick Boilers completely equipped and in shape to drill immediately. Located on the Tucker lease out of Haven, Kansas. For further information contact the Viking Drilling Company, c/o Yingling Chevrolet Company, Wichita, Kansas.

FOR quick sale #30 Star Rig Boiler, tools etc. Price $1000.00. Located Mule Creek district Wyoming. WANTED 3000 foot rotary equipment same location. Address G. M. KYLE, Park Ridge, Illinois.

TRACTORS
Government crawler type Caterpillars, 5 ton $375, 10 ton $695. Slightly used. Perfect condition.
O. C. EVANS
Mt. Sterling, Ky.

FOR SALE 45 Star Spudder Complete with tools and equipment, 13 inch down to 6⅝ inch. Also 60 Caterpillar tractor. J. L. Gardenhire, Centralia, Illinois.

FOR SALE: Used large capacity positive and orifice gas meters. Geo. R. Milner, Okmulgee, Oklahoma.

FOR SALE: At our Oklahoma City Warehouse Model D48 Muskogee Iron Works long line well servicing unit powered by HXE Hercules engines mounted on No. 55 truck. I.T.I.O., Bartlesville, Oklahoma.

FOR SALE—Used Refinery Equipment including complete 1000 bbl. Skimming Plant, all size horizontal and vertical tanks of 15,000 bbl. capacity and less. Steam and power pumps, boilers, compressors, valves and fittings. Western Tank & Road Supply Co., Wichita, Kansas.

Equipment Wanted

WOULD be interested in obtaining one used Octane Determination Machine to be C. F. R.-L.-3 method. Address Box J-863, The Oil and Gas Journal, Tulsa, Okla.

USED TRANSITS WANTED
No junk, antiquated, or worn-out instruments wanted—must be permissible to repair to shape like new. Write full particulars to
P. O. BOX 6005, Houston, Tex.

WANT POTENTIOMETER type Temperature Controller. HOME OIL, Humboldt, Saskatchewan, Canada.

Business Opportunities

NATURAL GAS: Offers good returns on your investment; shallow drilling. Good market. Low operating expense. Proven territory. H. W. Mitchell, 411 Pacific, Osawatomie, Kansas.

Incorporations

DELAWARE CHARTERS: Complete service $35. Submitted forms. Chas. G. Guyer, Inc., Wilmington, Delaware.

CHARTERS — Delaware best, quickest, cheapest, more liberal. Free forms. Colonial Charter Co., Wilmington, Del.

Survey of Fuel Consumption At Petroleum Refineries

A survey of fuel consumption at refineries in 1937, compiled by the Bureau of Mines, shows that the use of oil declined 3,500,000 bbls.; the use of acid sludge declined approximately 200,000 bbls., while the use of coal declined to about the level of 1935 consumption.

Natural gas continued its comeback as refinery fuel. Consumption increased in 1937 from 93,000,000,000 cu. ft. to 113,000,000,000 cu. ft. Still-gas, in spite of the diversion of refinery gases for polymerization, also gained, and 224,000,000,000 cu. ft. were used as compared with 210,689,000,000 cu. ft. in 1936. Petroleum coke consumption declined. More and more instances of utilization of surplus steam from nearby power houses are being recorded.

The fifth successive record in fuel efficiency was established by the refining industry in 1937, when the average heat requirement per barrel of crude oil run to stills was 554,000 B.t.u. compared with 597,000 B.t.u. in 1936. These amounts represent roughly the heat obtainable from a tenth of a barrel of fuel oil.

Innumerable factors can influence heat consumption at refineries, but only a few are important enough to be subject to statistical measurement. Foremost is the ratio of runs to capacity, it being generally recognized that because the fuel demands for other than stills are comparatively inelastic, total heat requirements do not increase in direct proportion to crude runs. Thus, in 1937, crude runs of 1,183,440,000 bbls. were 11 per cent higher than in 1936; the average operating ratio was 83 per cent compared with 78 per cent in 1936; but the total heat requirement increased only 4 per cent, or from 638,149,000,000,000 B.t.u. in 1936 to 663,866,000,000,000 B.t.u. in 1937.

Another factor of primary importance in reducing fuel requirements has been the continued expansion of the practice of heat exchange. Heat exchangers may now be found at an amazing number of points in the refinery stream, so many, in fact, at some plants as to suggest that construction has been overdone. However, a few scattered mistakes cannot obscure the excellent fuel economy record of heat exchangers, a record that became even more outstanding in 1937, particularly by construction at combination plants.

A factor that tends to increase fuel requirements is the degree to which the products are finished for the market. A complete plant will use two or three times as much fuel per barrel of crude refined as a topping plant. This factor is of major importance in some districts, for example, the Appalachian; but for the United States as a whole refining practice does not vary enough from year to year to permit one to do more than generalize. Thus in 1937 the yield of products heavier than gasoline, excluding residual fuel oil and unfinished oils, increased 0.7 per cent over 1936, indicating that slightly more heat units were required because of a growth in complexity of operations.

The most important factor in sustaining fuel requirements at refineries or in preventing an even greater decline in average fuel consumption per barrel has been the growth in cracking, an operation requiring higher than average temperatures. The production of cracked gasoline increased 12 per cent in 1937 over 1936. This material gain probably helped to sustain fuel demands at refineries, although a modern combination unit, which tops the crude by heat exchange and cracks with a pipe still, probably uses less fuel per barrel of crude than half the skimming plants, certainly less than the average for all plants.

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